

=> fil reg

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STRUCTURE FILE UPDATES: 19 AUG 2007 HIGHEST RN 944998-48-5  
DICTIONARY FILE UPDATES: 19 AUG 2007 HIGHEST RN 944998-48-5

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TSCA INFORMATION NOW CURRENT THROUGH June 29, 2007

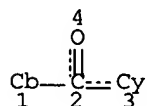
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REGISTRY includes numerically searchable data for experimental and  
predicted properties as well as tags indicating availability of  
experimental property data in the original document. For information  
on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stngen/stndoc/properties.html>

=> d sta que l22

L18 11661 SEA FILE=REGISTRY ABB=ON PLU=ON 9841/RID  
L20 STR



NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM  
GGCAT IS PCY AT 1  
DEFAULT ECLEVEL IS LIMITED  
ECOUNT IS M25 C AT 1

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 4

STEREO ATTRIBUTES: NONE

L22 33 SEA FILE=REGISTRY SUB=L18 SSS FUL L20

100.0% PROCESSED 6786 ITERATIONS  
SEARCH TIME: 00.00.01

33 ANSWERS

=> d his

(FILE 'HCAPLUS' ENTERED AT 06:53:39 ON 20 AUG 2007)

DEL HIS

L1 1 S US20060006365/PN OR (US2005-523101# OR WO2003-EP8465 OR IT200

E BAGALA/AU  
 L2 3 S E16  
 E RAMPAZZO/AU  
 L3 56 S E18-E21  
 E LILIANA/AU  
 E FIORAVANTI/AU  
 L4 16 S E25,E30  
 E GIULIA/AU  
 E MATTIELLO/AU  
 L5 38 S E27,E28  
 E MERCK OLED/CO  
 L6 3907 S E4-E12  
 E E4+ALL  
 E E1+ALL  
 L7 12407 S E2+RT  
 E MERCK OLED/PA,CS  
 L8 3907 S E6-E49  
 E MERCK KGAA/PA,CS  
 L9 178 S E3-E63  
 E BACK E3  
 L10 5 S E2,E9,E10  
 L11 5 S E3  
 E COVION/CO  
 L12 100 S E4,E5  
 E E4+ALL  
 E COVION/PA,CS  
 L13 101 S E3-E20  
 L14 1 S L1 AND L2-L13  
 SEL RN

FILE 'REGISTRY' ENTERED AT 06:59:11 ON 20 AUG 2007

L15 31 S E1-E31  
 L16 19 S L15 AND NR>=6  
 L17 18 S L16 NOT C25H16  
 E 9841/RID  
 L18 11661 S E3  
 E 9841.9/RID  
 L19 1507 S E4  
 L20 STR  
 L21 3 S L20 SAM SUB=L18  
 L22 33 S L20 FUL SUB=L18  
 SAV L22 NELSON532A/A  
 L23 21 S L22 NOT L17  
 L24 13 S L23 NOT PMS/CI  
 L25 6 S L17 NOT L22  
 L26 2 S L24 AND (C39H26N2O2 OR C39H22BR2O2)  
 L27 12 S L17 AND L22  
 L28 14 S L26,L27  
 SAV L28 NELSON532B/A

FILE 'HCAOLD' ENTERED AT 07:06:31 ON 20 AUG 2007

L29 0 S L28

FILE 'HCAPLUS' ENTERED AT 07:06:34 ON 20 AUG 2007

L30 6 S L28  
 L31 3 S L30 AND L1-L14  
 L32 2 S L30,L31 AND PY<=2004 NOT P/DT  
 L33 2 S L30,L31 AND (PD<=20041227 OR PRD<=20041227 OR AD<=20041227) A  
 L34 5 S L31-L33  
 L35 6 S L30,L34

FILE 'USPATFULL' ENTERED AT 07:08:02 ON 20 AUG 2007  
L36 2 S L28

FILE 'REGISTRY' ENTERED AT 07:08:13 ON 20 AUG 2007  
L37 19 S L22 NOT L28

FILE 'HCAPLUS' ENTERED AT 07:08:46 ON 20 AUG 2007  
L38 19 S L37  
L39 14 S L38 AND L1-L14  
L40 3 S L38 AND PY<=2004 NOT P/DT  
L41 9 S L38 AND (PD<=20041227 OR PRD<=20041227 OR AD<=20041227) AND P  
L42 12 S L40,L41  
L43 9 S L39 AND L42  
L44 12 S L42,L43

FILE 'REGISTRY' ENTERED AT 07:09:53 ON 20 AUG 2007

=> fil uspatful

FILE 'USPATFULL' ENTERED AT 07:10:03 ON 20 AUG 2007  
CA INDEXING COPYRIGHT (C) 2007 AMERICAN CHEMICAL SOCIETY (ACS)

FILE COVERS 1971 TO PATENT PUBLICATION DATE: 16 Aug 2007 (20070816/PD)  
FILE LAST UPDATED: 16 Aug 2007 (20070816/ED)  
HIGHEST GRANTED PATENT NUMBER: US7257844  
HIGHEST APPLICATION PUBLICATION NUMBER: US2007192920  
CA INDEXING IS CURRENT THROUGH 16 Aug 2007 (20070816/UPCA)  
ISSUE CLASS FIELDS (/INCL) CURRENT THROUGH: 16 Aug 2007 (20070816/PD)  
REVISED CLASS FIELDS (/NCL) LAST RELOADED: Jun 2007  
USPTO MANUAL OF CLASSIFICATIONS THESAURUS ISSUE DATE: Jun 2007

=> d l36 bib abs hitstr tot

L36 ANSWER 1 OF 2 USPATFULL on STN  
AN 2006:244841 USPATFULL Full-text  
TI Mixtures of matrix materials and organic semiconductors capable of  
emission, use of the same and electronic components containing said  
mixtures  
IN Gerhard, Anja, Humboldtstrasse, GERMANY, FEDERAL REPUBLIC OF  
Vestweber, Horst, Gilserberg-Winterscheid, GERMANY, FEDERAL REPUBLIC OF  
Stossel, Philipp, Frankfurt, GERMANY, FEDERAL REPUBLIC OF  
Heun, Susanne, Am Carlusbaum, GERMANY, FEDERAL REPUBLIC OF  
Spreitzer, Hubert, Viernheim, GERMANY, FEDERAL REPUBLIC OF  
PA Covion Organic Semiconductors Gmbh, Frankfurt am Main, GERMANY, FEDERAL  
REPUBLIC OF, D-65926 (non-U.S. corporation)  
PI US 2006208221 A1 20060921  
AI US 2004-553114 A1 20040413 (10)  
WO 2004-EP3861 20040413  
20051014 PCT 371 date  
PRAI DE 2003-10317556 20030415  
DE 2003-10355358 20031125  
DT Utility  
FS APPLICATION  
LREP CONNOLLY BOVE LODGE & HUTZ, LLP, P O BOX 2207, WILMINGTON, DE, 19899, US  
CLMN Number of Claims: 21  
ECL Exemplary Claim: 1  
DRWN 4 Drawing Page(s)  
LN.CNT 1551  
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention describes new types of material mixtures composed of at least two substances, one serving as a matrix material and the other being an emission material capable of emission, the latter comprising at least one element of atomic number greater than 20, and the use thereof in organic electronic components such as electroluminescent elements and displays.

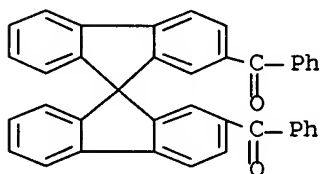
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

IT 658710-76-0P

(emitting mixts. of matrix materials and organometallic semiconductors and their use and electronic components containing mixts.)

RN 658710-76-0 USPATFULL

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[phenyl]- (9CI) (CA INDEX NAME)

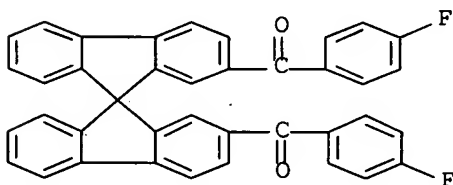


IT 658710-83-9P

(emitting mixts. of matrix materials and organometallic semiconductors and their use and electronic components containing mixts.)

RN 658710-83-9 USPATFULL

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[(4-fluorophenyl)- (9CI) (CA INDEX NAME)



L36 ANSWER 2 OF 2 USPATFULL on STN

AN 2006:7521 USPATFULL Full-text

TI Spirobifluorene derivatives, their preparation and uses thereof

IN Bagala' Rampazzo, Liliana, Roma, ITALY

Fioravanti, Giulia, Roma, ITALY

Mattiello, Leonardo, Roma, ITALY

PA Covion Organic Semiconductors GmbH, Frankfurt am Main, GERMANY, FEDERAL REPUBLIC OF, D-65926 (non-U.S. corporation)

PI US 2006006365 A1 20060112

AI US 2003-523101 A1 20030731 (10)

WO 2003-EP8465 20030731

20050201 PCT 371 date

PRAI IT 2002-RM411 20020801

DT Utility

FS APPLICATION

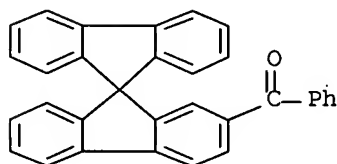
LREP CONNOLLY BOVE LODGE & HUTZ, LLP, P O BOX 2207, WILMINGTON, DE, 19899, US  
 CLMN Number of Claims: 27  
 ECL Exemplary Claim: 1  
 DRWN No Drawings  
 LN.CNT 933

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

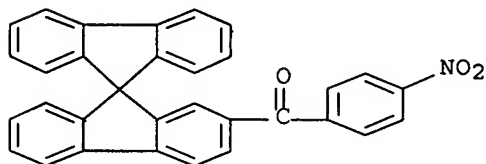
AB The invention concerns Spirobifluorene derivatives having the general formula (II) and the corresponding, radical anions that can be represented via the general formula (II): ##STR1## in which K, L, M and N, the same or different from each other, are independently: H or A-C.dbd.O, with the proviso that it is never K=L=M=N.dbd.H, wherein A is an aromatic group, possibly substituted with at least an R' group selected in the group of the substituents commonly used in organic chemistry and/or at least one R group where R=aliphatic radical. The invention also concerns the method for preparing said derivatives and radical anions. Said compounds are applied in the field of components for molecular electronics, in particular systems for electroluminescence, molecular-based computational systems, OLEDs, molecular switching components, components for non-linear optics, field-effect transistors and semiconductors with negative differential resistance.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

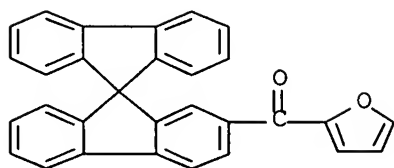
IT 658710-67-9P 658710-68-0P 658710-69-1P  
 658710-70-4P 658710-72-6P 658710-74-8P  
 658710-76-0P 658710-78-2P 658710-81-7P  
 658710-83-9P 658710-85-1P 658710-87-3P  
 (spirobifluorene derivs. and radical anions and their preparation and use)  
 RN 658710-67-9 USPATFULL  
 CN Methanone, phenyl-9,9'-spirobi[9H-fluoren]-2-yl- (9CI) (CA INDEX NAME)



RN 658710-68-0 USPATFULL  
 CN Methanone, (4-nitrophenyl)-9,9'-spirobi[9H-fluoren]-2-yl- (9CI) (CA INDEX NAME)

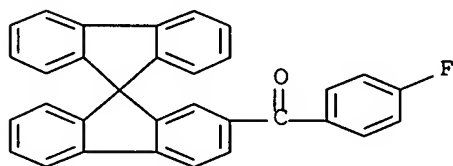


RN 658710-69-1 USPATFULL  
 CN Methanone, 2-furanyl-9,9'-spirobi[9H-fluoren]-2-yl- (9CI) (CA INDEX NAME)



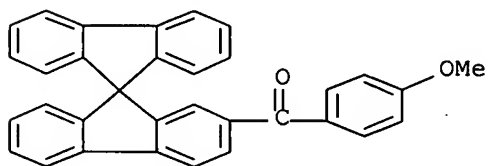
RN 658710-70-4 USPATFULL

CN Methanone, (4-fluorophenyl)-9,9'-spirobi[9H-fluoren]-2-yl- (9CI) (CA INDEX NAME)



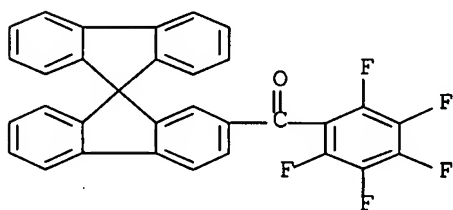
RN 658710-72-6 USPATFULL

CN Methanone, (4-methoxyphenyl)-9,9'-spirobi[9H-fluoren]-2-yl- (9CI) (CA INDEX NAME)



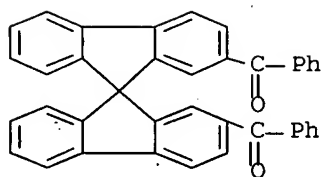
RN 658710-74-8 USPATFULL

CN Methanone, (pentafluorophenyl)-9,9'-spirobi[9H-fluoren]-2-yl- (9CI) (CA INDEX NAME)



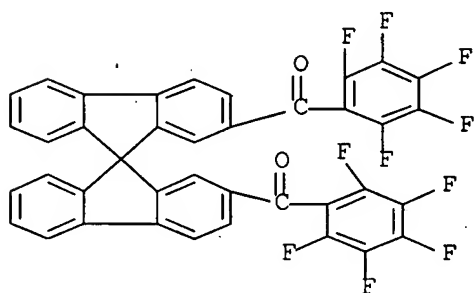
RN 658710-76-0 USPATFULL

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[phenyl- (9CI) (CA INDEX NAME)]



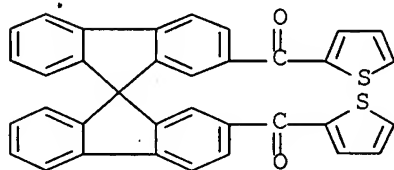
RN 658710-78-2 USPATFULL

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[(pentafluorophenyl)-  
(9CI) (CA INDEX NAME)



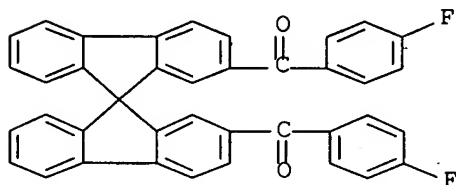
RN 658710-81-7 USPATFULL

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[2-thienyl- (9CI) (CA  
INDEX NAME)



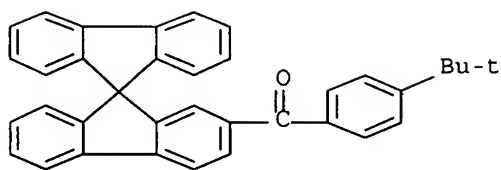
RN 658710-83-9 USPATFULL

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[(4-fluorophenyl)- (9CI)  
(CA INDEX NAME)



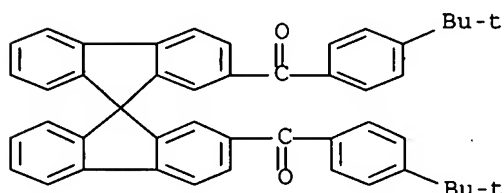
RN 658710-85-1 USPATFULL

CN Methanone, [4-(1,1-dimethylethyl)phenyl]-9,9'-spirobi[9H-fluorene]-2-yl-  
(9CI) (CA INDEX NAME)



RN 658710-87-3 USPATFULL

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[[4-(1,1-dimethylethyl)phenyl]- (9CI) (CA INDEX NAME)



=> fil hcaplus

FILE 'HCAPLUS' ENTERED AT 07:10:16 ON 20 AUG 2007

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FILE COVERS 1907 - 20 Aug 2007 VOL 147 ISS 9

FILE LAST UPDATED: 19 Aug 2007. (20070819/ED)

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This file contains CAS Registry Numbers for easy and accurate substance identification.

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L35 ANSWER 1 OF 6 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2006:1173494 HCAPLUS Full-text

DN 145:498536

TI Organic electronic devices and boronic acid and boronic acid derivatives used therein



IN Stoessel, Philipp; Breuning, Esther; Buesing, Arne; Parham, Amir; Heil, Holger; Vestweber, Horst  
 PA Merck Patent G.m.b.H., Germany  
 SO PCT Int. Appl., 159pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA German  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2006117052	A1	20061109	WO 2006-EP3150	20060406
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				

PRAI EP 2005-9643 A 20050503

AB Organic electronic devices (e.g., organic or polymer light-emitting diodes, organic field-effect transistors, organic integrated circuits, organic thin-film transistors, organic light-emitting transistors, organic solar cells, organic field quenching devices, organic light-emitting cells, organic photoreceptors, and organic laser diodes) are described which comprise  $\geq 1$  organic film including  $\geq 1$  aromatic boronic acid or boronic acid derivative compound. The compds. may serve as fluorescent or phosphorescent dopants, as hole-blocking materials, as hole-transporting materials, or as electron-transporting materials. Oligomeric, dendrimeric, and polymeric compds. of boronic acid or boronic acid derivative compds. are also described. Methods for synthesizing polymers including boronic acid. derivs. are described which entail polycondensation of aliphatic or aromatic bis(diols), bis(dithiols), bis(diamines), or similar higher substituted compds. with an aromatic bisboronic acid or higher boronic acid or by reaction of an aromatic compound that includes 2 hydroxy, thiol, or amino groups as well as a boronic acid group.

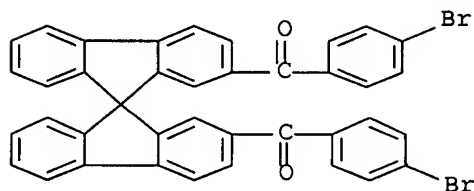
IT 914307-05-4P, 2,2'-Bis(4-bromobenzoyl)spiro-9,9'-bifluorene

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(organic electronic devices and boronic acid and boronic acid derivs. used in them and production of polymers including boronic acid-containing groups)

RN 914307-05-4 HCAPLUS

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[(4-bromophenyl)- (9CI) (CA INDEX NAME)



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Amann, N	2002	8	4877	CHEMISTRY, A EUROPEA	HCAPLUS
Amann, N	2002		687	SYNLETT	HCAPLUS
Anon	2003	2003		PATENT ABSTRACTS OF	
Anon	2003	2003		PATENT ABSTRACTS OF	
Baumgarten, M	2000	104	1130	JOURNAL OF PHYSICAL	HCAPLUS
Beinhoff, M	2001		3819	EUROPEAN JOURNAL OF	HCAPLUS
Buettelmann, B	2003			US 2003229096 A1	HCAPLUS
Chisso Corporation	2001			EP 1142895 A	HCAPLUS
Chow, H	2002	85	3444	HELVETICA CHIMICA AC	HCAPLUS
Chow, H	2001	66	5042	JOURNAL OF ORGANIC C	HCAPLUS
Covion Organic Semicond	2002			WO 02051850 A	HCAPLUS
Covion Organic Semicond	2002			WO 02052661 A	
Eastman Kodak Company	2005			WO 2005020283 A	HCAPLUS
Finocchiaro, P	1973	95	7029	JOURNAL OF THE AMERI	HCAPLUS
Goswami, A	2004		2635	EUROPEAN JOURNAL OF	HCAPLUS
Ishikura, M	1985	23	2375	HETEROCYCLES	HCAPLUS
Ishiyama, T	1997	201	92	SPECIAL PUBLICATION	HCAPLUS
Kaupp, G	2003	9	4156	CHEMISTRY, A EUROPEA	HCAPLUS
Ken-Tsung, W	2002	67	1041	JOURNAL OF ORGANIC C	
Koch, K	1991	124	2091	CHEMISCHE BERICHTE	HCAPLUS
Koei Chem Co Ltd	2004			JP 2004189705 A	HCAPLUS
Konica Corp	2003			JP 2003031368 A	HCAPLUS
Lg Chem Ltd	2003			WO 03095445 A	HCAPLUS
Michels, J	2003	9	6167	CHEMISTRY, A EUROPEA	HCAPLUS
Modrakowski, C	2001		2143	SYNTHESIS	HCAPLUS
Ramsey, B	2005	690	962	JOURNAL OF ORGANOMET	HCAPLUS
Tirapattur, S	2002	106	8959	JOURNAL OF PHYSICAL	
Treacher, K	2004			US 2004260090 A1	HCAPLUS
Tsung, W	2004			US 2004147742 A1	
Universal Display Corpo	2003			WO 03033617 A	
Wei-Bo, W	2002			US 2002019527 A1	
Wong, K	2002	124	11576	JOURNAL OF THE AMERI	HCAPLUS
Yamashita, M	2000	39	4055	ANGEWANDTE CHEMIE IN	HCAPLUS

L35 ANSWER 2 OF 6 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2005:582200 HCAPLUS Full-text

DN 143:237672

TI New Series of Light-Emitting Polyquinolines Containing  
9,9'-Spirobifluorene Units

AU Huang, Bing; Li, Jun; Jiang, Zuoquan; Qin, Jingui; Yu, Gui; Liu, Yunqi

CS Department of Chemistry, Wuhan University, Wuhan, 430072, Peop. Rep. China

SO Macromolecules (2005), 38(16), 6915-6922

CODEN: MAMOBX; ISSN: 0024-9297

PB American Chemical Society

DT Journal

LA English

OS CASREACT 143:237672

AB A new series of polyquinoline copolymers (P1-P5) containing 9,9'-spirobifluorene in the main chain were synthesized via Friedlander reactions. The emission colors of the polymers were readily tuned from blue to yellow by changing the conjugated counits. Excellent EL performances were obtained for the phenothiazine-containing copolymer P5, probably because the proper donor/acceptor pairs were rightly matched, and the charge transport was significantly balanced. The devices based on P5 showed a maximum external quantum efficiency of 0.63% and a maximum photometric efficiency of 1.85 cd/A

(at a brightness of 140 cd/m<sup>2</sup>). Yellow-green EL with narrow full width at the half-maximum (fwhm < 70 nm) and the highest maximum luminance (1768 cd/m<sup>2</sup>) among the currently reported polyquinolines was obtained for P5.

IT 402934-28-5

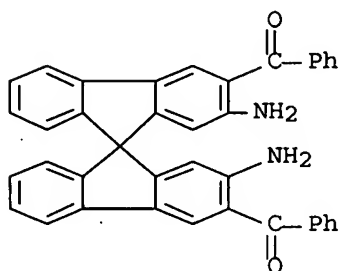
RL: RCT (Reactant); RACT (Reactant or reagent)

(Friedlander condensation polymerization reaction; preparation, thermal anal., UV

and fluorescence, electrochem., and electroluminescence of polyquinolines containing 9,9'-spirobifluorene units)

RN 402934-28-5 HCAPLUS

CN Methanone, (2,2'-diamino-9,9'-spirobi[9H-fluorene]-3,3'-diyl)bis[phenyl-(9CI) (CA INDEX NAME)



# RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Agrawal, A	1996	8	579	Chem Mater	HCAPLUS
Alam, M	2002	106	11172	J Phys Chem B	HCAPLUS
Babel, A	2002	14	371	Adv Mater	HCAPLUS
Babel, A	2003	107	1749	J Phys Chem B	HCAPLUS
Barney, P	2000		493	C R Acad Sci Paris	
Boyd, T	1997	30	3553	Macromolecules	HCAPLUS
Brabec, C	2001	11	15	Adv Funct Mater	HCAPLUS
Brigl, P	1939	72	2121	Ber B	
Burroughes, J	1990	347	539	Nature (London)	HCAPLUS
Cao, Y	1999	397	414	Nature (London)	HCAPLUS
Chen, C	2004	4	1585	J Chem Mater	
Chen, C	2004	42	3314	J Polym Sci, Part A:	HCAPLUS
Chen, T	1996	8	607	Chem Mater	HCAPLUS
Chiang, C	2002	14	682	Chem Mater	HCAPLUS
Cui, Y	1999	32	3824	Macromolecules	HCAPLUS
de Leeuw, D	1997	87	53	Synth Met	HCAPLUS
Ego, C	2002	14	809	Adv Mater	HCAPLUS
Friend, R	1999	397	121	Nature (London)	HCAPLUS
Fungo, F	2003	15	1264	Chem Mater	HCAPLUS
Geng, Y	2002	14	463	Chem Mater	HCAPLUS
He, Y	1999	74	2265	Appl Phys Lett	HCAPLUS
Heeger, A	2001	40	2591	Angew Chem, Int Ed	HCAPLUS
Jen, A	1998	10	471	Chem Mater	HCAPLUS
Jenekhe, S	2000	77	2635	Appl Phys Lett	HCAPLUS
Jenekhe, S	2001	34	7315	Macromolecules	HCAPLUS
Katsis, D	2002	14	1332	Mater Chem	HCAPLUS
Kim, D	2000	25	1089	Prog Polym Sci	HCAPLUS
Kim, J	1999	32	2065	Macromolecules	HCAPLUS
Kraft, A	1998	37	402	Angew Chem, Int Ed	

Kruder, W	1998			US 5763636	HCAPLUS
Kruger, H	2003	204	1607	Macromol Chem Phys	
Lee, H	2003	59	2773	Tetrahedron	HCAPLUS
Lee, T	2002	40	1831	J Polym Sci, Part A:	HCAPLUS
Li, X	1999	11	1568	Chem Mater	HCAPLUS
Liu, M	1999	9	2201	J Mater Chem	HCAPLUS
Liu, Y	1999	11	27	Chem Mater	HCAPLUS
Lu, J	2004	37	2442	Macromolecules	HCAPLUS
Ma, H	1999	11	2218	Chem Mater	HCAPLUS
Mark, T	2000	12	1737	Adv Mater	
Marsitzky, D	2001	13	4285	Chem Mater	HCAPLUS
Mikroyaannidis, J	2003	36	9295	Macromolecules	
Miller, R	2002	43	116	Polym Prepr	HCAPLUS
Muller, C	2003	421	829	Nature (London)	
Ong, B	2004	126	3378	J Am Chem Soc	HCAPLUS
Park, D	2002	43	71	Polym Prepr	HCAPLUS
Pei, J	2002	67	4924	J Org Chem	HCAPLUS
Peng, Z	1998	10	2086	Chem Mater	HCAPLUS
Pudzich, R	2003	138	21	Synth Met	HCAPLUS
Salbeck, J	1997	91	209	Synth Met	HCAPLUS
Shin, D	2003	36	3222	Macromolecules	HCAPLUS
Sloan, G	1957	22	750	J Org Chem	HCAPLUS
Steuber, F	2000	12	130	Adv Mater	HCAPLUS
Stille, J	1981	14	870	Macromolecules	HCAPLUS
Sybert, P	1981	14	493	Macromolecules	HCAPLUS
Tong, H	2002	35	7169	Macromolecules	HCAPLUS
Tong, H	2003	36	2584	Macromolecules	HCAPLUS
Tonzola, C	2003	125	13548	J Am Chem Soc	HCAPLUS
Tonzola, C	2004	37	3554	Macromolecules	HCAPLUS
Vak, D	2004	14	1342	J Mater Chem	HCAPLUS
Wang, S	2003	137	1153	Synth Met	HCAPLUS
Wong, K	2002	124	11576	J Am Chem Soc	HCAPLUS
Wu, C	2004	16	61	Adv Mater	HCAPLUS
Wu, C	2003	125	3710	J Am Chem Soc	HCAPLUS
Wu, F	2002	12	2893	J Mater Chem	HCAPLUS
Wu, T	2004	37	725	Macromolecules	HCAPLUS
Wynberg, H	1956	78	1958	J Am Chem Soc	HCAPLUS
Yang, C	1995	28	1180	Macromolecules	HCAPLUS
Yang, J	2004	37	1211	Macromolecules	HCAPLUS
Yang, N	2004	42	1058	J Polym Sci, Part A:	HCAPLUS
Yu, W	2000	12	828	Adv Mater	HCAPLUS
Yu, W	1998	31	4838	Macromolecules	HCAPLUS
Zhang, X	1999	32	7422	Macromolecules	HCAPLUS
Zhang, X	2000	33	2069	Macromolecules	HCAPLUS
Zhang, X	2000	33	2069	Macromolecules	HCAPLUS
Zhang, X	2002	35	382	Macromolecules	HCAPLUS
Ziemelis, K	1999	399	408	Nature (London)	

L35 ANSWER 3 OF 6 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2004:906077 HCAPLUS Full-text

DN 141:386129

TI Mixtures of matrix materials and organic semiconductors capable of emission, use of the same and electronic components containing the mixtures

IN Gerhard, Anja; Vestweber, Horst; Stoessel, Philipp; Heun, Susanne; Spreitzer, Hubert

PA Covion Organic Semiconductors G.m.b.H., Germany

SO PCT Int. Appl., 50 pp.

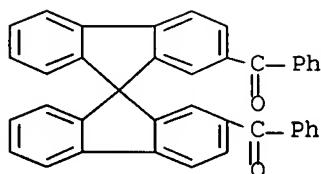
CODEN: PIXXD2

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004093207	A2	20041028	WO 2004-EP3861	20040413 <--
	WO 2004093207	A3	20050609		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	DE 10317556	A1	20041104	DE 2003-10317556	20030415 <--
	DE 10355358	A1	20050707	DE 2003-10355358	20031125 <--
	EP 1618170	A2	20060125	EP 2004-726968	20040413 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
	CN 1774491	A	20060517	CN 2004-80010244	20040413 <--
	JP 2006523740	T	20061019	JP 2006-505097	20040413 <--
	EP 1717291	A2	20061102	EP 2006-14637	20040413 <--
	EP 1717291	A3	20070321		
	R: DE, FR, GB, NL				
	US 2006208221	A1	20060921	US 2005-553114	20051014 <--
PRAI	DE 2003-10317556	A	20030415	<--	
	DE 2003-10355358	A	20031125	<--	
	EP 2004-726968	A3	20040413	<--	
	WO 2004-EP3861	W	20040413	<--	
AB	Mixts. are described which comprise a matrix material having a structural unit of the form C:Q (Q = O, S, Se, or N and is possessed of a nonbonded electron pair) and $\geq 1$ emitting material which emits light when excited and which includes $\geq 1$ element having an atomic number $>20$ . The matrix material may comprise a compound including spirobifluorene derivative units, (including spirobifluorene compds with substituted nitrogen heteroatoms replacing the ring carbons), and specific suitable compds. are also described. The matrix material may also comprise a polymer or dendrimer. The emitting material is preferably a complex of Mo, W, Rh, Ru, Os, Re, Ir, Pd, Pt, Ag, Au, or Eu. Organic electronic components (e.g., organic light-emitting devices, organic solar cells, organic FETs, organic integrated circuits; organic thin-film transistors, and organic laser diodes) are also described which employ the mixts.				
IT	658710-76-0P				
	RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)				
	(emitting mixts. of matrix materials and organometallic semiconductors and their use and electronic components containing mixts.)				
RN	658710-76-0 HCAPLUS				
CN	Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[phenyl- (9CI) (CA INDEX NAME)				

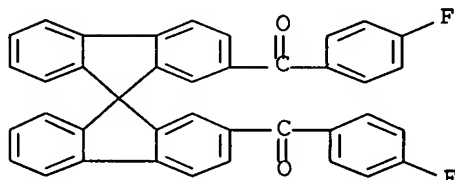


IT 658710-83-9P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(emitting mixts. of matrix materials and organometallic semiconductors and their use and electronic components containing mixts.)

RN 658710-83-9 HCAPLUS

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[(4-fluorophenyl)- (9CI)  
(CA INDEX NAME)



L35 ANSWER 4 OF 6 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2004:392934 HCAPLUS Full-text

DN 141:147321

TI Spirobifluorene-based pyrazoloquinolines: efficient blue electroluminescent materials

AU Chen, Ching-Hsin; Wu, Fang-Iy; Shu, Ching-Fong; Chien, Chin-Hsiung; Tao, Yu-Tai

CS Department of Applied Chemistry, National Chiao Tung University, Hsin-Chu, 30035, Taiwan

SO Journal of Materials Chemistry (2004), 14(10), 1585-1589

CODEN: JMACEP; ISSN: 0959-9428

PB Royal Society of Chemistry

DT Journal

LA English

AB We report the synthesis of spirobifluorene-based pyrazoloquinolines, spiro-PAQ-Me and spiro-PAQ-Ph, in which two identical luminophores are connected through an sp<sup>3</sup>-hybridized carbon atom (a spiro center) and are orthogonally arranged. The incorporation of the rigid spirobifluorene linkage results in significant increases in the glass transition temps., which are in the range 246-280 °C. These new materials display the characteristic absorptions of the mono-pyrazoloquinoline (i.e. non-spiro) derivs., each with a broad, low-energy absorption at ca. 420 nm, and emit photoluminescence efficiently in the blue region. Electrochem. studies reveal that these compds. exhibit reversible redns. and low-lying LUMO energy levels that originate from the electron-deficient nature of the pyrazoloquinoline ring. Multilayer organic electroluminescent devices constructed using spiro-PAQ-Ph as a dopant in the emitting layer produced bright blue emissions with maximum luminescence exceeding 20 000 cd m<sup>-2</sup>. For the 2.0%-doped device, a high external quantum efficiency of 3.6% (4.5 cd A<sup>-1</sup>, 2.02 lm W<sup>-1</sup>) was achieved at 20 mA cm<sup>-2</sup> and 7.0 V with color coordinates of (0.14, 0.17).

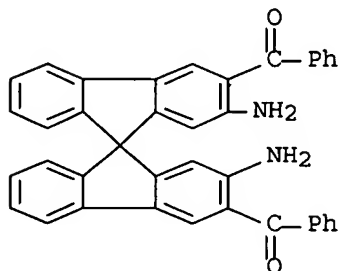
IT 402934-28-5P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(spirobifluorene-based pyrazoloquinolines for efficient blue electroluminescent devices)

RN 402934-28-5 HCAPLUS

CN Methanone, (2,2'-diamino-9,9'-spirobi[9H-fluorene]-3,3'-diyl)bis[phenyl-(9CI) (CA INDEX NAME)



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Balasubramaniam, E	2000	12	2788	Chem Mater	HCAPLUS
Chen, C	1998	171	161	Coord Chem Rev	HCAPLUS
Chen, C	1997	125	1	Macromol Symp	
Chen, F	2002	80	2308	Appl Phys Lett	HCAPLUS
Chiang, C	2002	14	682	Chem Mater	HCAPLUS
Eaton, D	1998	60	1107	Pure Appl Chem	
Gao, X	1999	9	1077	J Mater Chem	HCAPLUS
Gao, Z	1999	105	141	Synth Met	HCAPLUS
Gu, G	1998	4	83	IEEE J Sel Top Quant	HCAPLUS
He, Z	2000	86	1	J Lumin	HCAPLUS
He, Z	1999	9	2323	J Mater Chem	
Hung, L	2002	39	143	Mater Sci Eng, R	
Johansson, N	1998	10	1136	Adv Mater	HCAPLUS
Johansson, N	1997	107	2542	J Chem Phys	HCAPLUS
Joswick, M	1996	80	2883	J Appl Phys	HCAPLUS
Kido, J	1994	64	815	Appl Phys Lett	HCAPLUS
Kido, J	1995	67	2281	Appl Phys Lett	HCAPLUS
Konne, B	1998	10	2235	Chem Mater	
Mitschke, U	2000	10	1471	J Mater Chem	HCAPLUS
Miyata, S	1997			Organic Electrolumin	
Niziol, J	2002	127	175	Synth Met	HCAPLUS
O'Brien, D	1998	10	1108	Adv Mater	HCAPLUS
Pommerehne, J	1995	7	551	Adv Mater	HCAPLUS
Salbeck, J	1997	125	121	Macromol Symp	
Salbeck, J	1997	91	209	Synth Met	HCAPLUS
Shen, W	2004	16	930	Chem Mater	HCAPLUS
Shi, J	1997			US 5645948	HCAPLUS
Shirota, Y	2000	10	1	J Mater Chem	HCAPLUS
Steuber, F	2000	12	130	Adv Mater	HCAPLUS
Tang, C	1987	51	913	Appl Phys Lett	HCAPLUS
Tao, Y	2000	77	933	Appl Phys Lett	HCAPLUS
Tao, Y	2001	13	1207	Chem Mater	HCAPLUS
Tao, Y	2002	14	4256	Chem Mater	HCAPLUS

Tao, Y	2001	11	768	J Mater Chem	HCAPLUS
Tian, H	2001		990	Chem Lett	HCAPLUS
Tokito, S	1997	70	1929	Appl Phys Lett	HCAPLUS
Weisburger, J	1950	72	4253	J Am Chem Soc	HCAPLUS
Wu, F	2002	12	2893	J Mater Chem	HCAPLUS
Wu, R	1996	61	6906	J Org Chem	HCAPLUS
Wu, S	2003	41	1160	J Polym Sci, Part A:	HCAPLUS
Yan, Z	1992	66	69	J Photochem Photobio	
Zhang, X	2000	320	77	Chem Phys Lett	HCAPLUS
Zhang, Z	2000	363	61	Thin Solid Films	

L35 ANSWER 5 OF 6 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2004:120815 HCAPLUS Full-text

DN 140:181223

TI Spirobifluorene derivatives, their preparation and uses thereof

IN Bagala', Rampazzo Liliana; Fioravanti, Giulia;  
Mattiello, Leonardo

PA Universita Degli Studi Di Roma 'la Sapienza', Italy; Bagala' Rampazzo,  
Liliana

SO PCT Int. Appl., 31 pp.

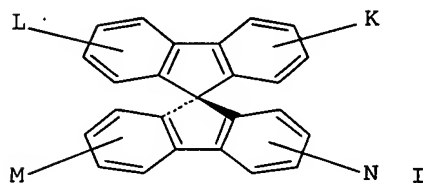
CODEN: PIXXD2

DT Patent

LA English

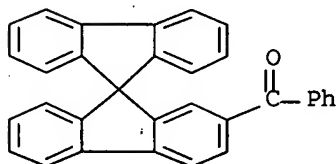
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004013080	A1	20040212	WO 2003-EP8465	20030731 <--
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	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2003260342	A1	20040223	AU 2003-260342	20030731 <--
	EP 1534661	A1	20050601	EP 2003-766376	20030731 <--
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	CN 1678561	A	20051005	CN 2003-820781	20030731 <--
	JP 2005538999	T	20051222	JP 2004-525396	20030731 <--
	US 2006006365	A1	20060112	US 2005-523101	20050201 <--
PRAI	IT 2002-RM411	A	20020801	<--	
	WO 2003-EP8465	W	20030731	<--	
OS	MARPAT 140:181223				
GI					

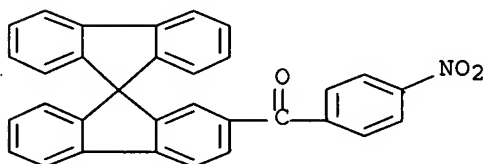




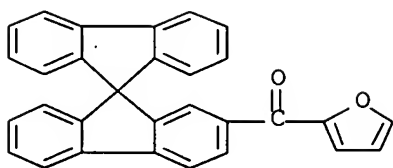
- AB Spirobifluorene derivs. and the corresponding radical anions are claimed which are described by the general formula I (K, L, M, and N = independently selected H or A-C:O, with the proviso that the selection is never K = L = M = N = H; A = an aromatic group substituted with  $\geq 1$  radical R; and R = H or aliphatic). Methods for preparing the derivs. are described which entail reacting a nonfunctionalized spirobifluorene with A-C:OCl in the presence of a Lewis acid or the reaction of a spirobifluorene functionalized as an acid chloride with A-H. The specific compds. 9,9'-spirobi(9H-fluorene)-2-carbonyl chloride, 9,9'-spirobi(9H-fluorene)-2,2',7-tricarbonyl trichloride, and 9,9'-Spirobi(9H-fluorene)-2,2',7-7'-tetracarbonyl tetrachloride are also claimed. Electrochem. methods for preparing the radical anions corresponding to the spirobifluorene derivs. are also described. The use of the compds., in electronic devices and electronic devices, in particular systems for electroluminescence, mol.-based computational systems, organic LEDs, mol. switching components, components for nonlinear optics, field-effect transistors, and semiconductors with neg. differential resistance, are also described (no data).
- IT 658710-67-9P 658710-68-0P 658710-69-1P  
 658710-70-4P 658710-72-6P 658710-74-8P  
 658710-76-0P 658710-78-2P 658710-81-7P  
 658710-83-9P 658710-85-1P 658710-87-3P  
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (spirobifluorene derivs. and radical anions and their preparation and use)
- RN 658710-67-9 HCAPLUS
- CN Methanone, phenyl-9,9'-spirobi[9H-fluoren]-2-yl- (9CI) (CA INDEX NAME)



- RN 658710-68-0 HCAPLUS
- CN Methanone, (4-nitrophenyl)-9,9'-spirobi[9H-fluoren]-2-yl- (9CI) (CA INDEX NAME)

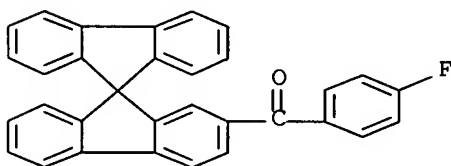


- RN 658710-69-1 HCAPLUS
- CN Methanone, 2-furanyl-9,9'-spirobi[9H-fluoren]-2-yl- (9CI) (CA INDEX NAME)



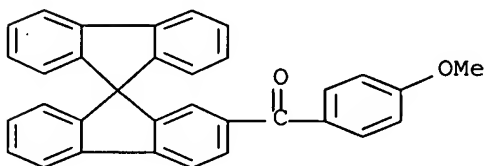
RN 658710-70-4 HCAPLUS

CN Methanone, (4-fluorophenyl)-9,9'-spirobi[9H-fluorene]-2-yl- (9CI) (CA INDEX NAME)



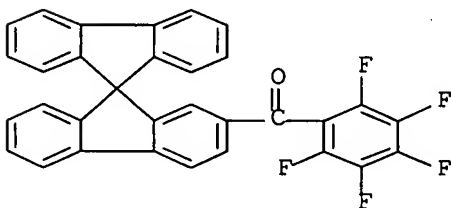
RN 658710-72-6 HCAPLUS

CN Methanone, (4-methoxyphenyl)-9,9'-spirobi[9H-fluorene]-2-yl- (9CI) (CA INDEX NAME)



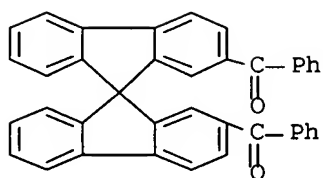
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CN Methanone, (pentafluorophenyl)-9,9'-spirobi[9H-fluorene]-2-yl- (9CI) (CA INDEX NAME)



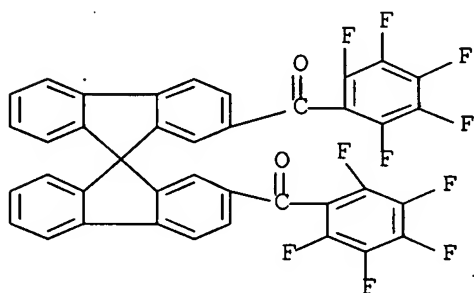
RN 658710-76-0 HCAPLUS

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[phenyl- (9CI) (CA INDEX NAME)]



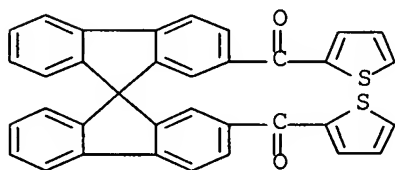
RN 658710-78-2 HCAPLUS

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[(pentafluorophenyl)-(9CI) (CA INDEX NAME)



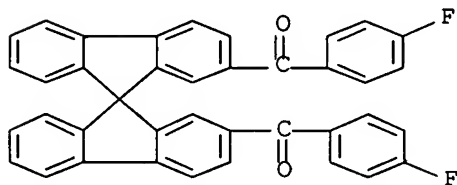
RN 658710-81-7 HCAPLUS

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[2-thienyl- (9CI) (CA INDEX NAME)



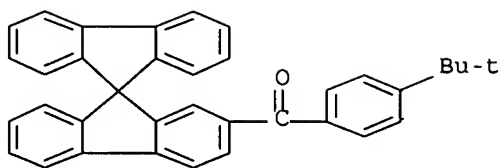
RN 658710-83-9 HCAPLUS

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[(4-fluorophenyl)- (9CI) (CA INDEX NAME)



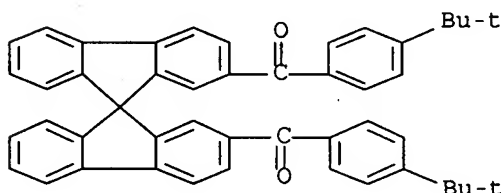
RN 658710-85-1 HCAPLUS

CN Methanone, [4-(1,1-dimethylethyl)phenyl]-9,9'-spirobi[9H-fluorene]-2-yl- (9CI) (CA INDEX NAME)



RN 658710-87-3 HCAPLUS

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[[4-(1,1-dimethylethyl)phenyl]- (9CI) (CA INDEX NAME)



L35 ANSWER 6 OF 6 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2002:26831 HCAPLUS Full-text

DN 136:232651

TI Synthesis and Characterization of New Polyquinolines Containing 9,9'-Spirobifluorene Units

AU Chiang, Chi-Long; Shu, Ching-Fong

CS Department of Applied Chemistry, National Chiao Tung University, Hsin-Chu, 30035, Taiwan

SO Chemistry of Materials (2002), 14(2), 682-687

CODEN: CMATEX; ISSN: 0897-4756

PB American Chemical Society

DT Journal

LA English

AB Polyquinolines, which contain 9,9'-spirobifluorene units in the main chain, were synthesized via the acid-catalyzed Friedlander condensation reactions of bis(o-aminoketone) with bisacetyl monomers. In the spiro-fused bifluorene moiety, the two mutually perpendicular fluorene rings were connected via a common tetracoordinated carbon atom. This structural feature leads to polymers that possess high thermal stability and good solubility in common organic solvents. The polyquinolines have similar lowest energy transitions that can be attributed to a  $\pi$ - $\pi^*$  transition with  $\lambda_{\text{max}}$  values in the 363-385 nm range and exhibit blue emission. A model compound was synthesized to demonstrate that the tetrahedral bonding carbon at the center of the spiro moiety could serve as a conjugation interrupt to effectively control the conjugation length of the polymers. The electrochem. behaviors of these polymers were investigated by cyclic voltammetry. The reversible reduction and low-lying LUMO energy level suggest that some of the polyquinolines might have potential for use as materials for electron injection and transport in polymer LEDs.

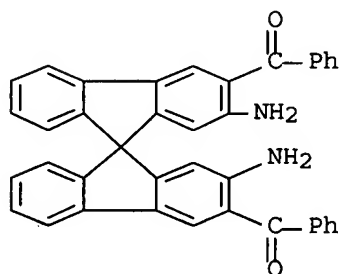
IT 402934-28-5

RL: RCT (Reactant); RACT (Reactant or reagent)

(monomer; Friedlander condensation polymerization synthesis of 9,9'-spirobifluorene-containing polyquinolines and their optical, elec.,

and thermal properties)

RN 402934-28-5 HCAPLUS

CN Methanone, (2,2'-diamino-9,9'-spirobi[9H-fluorene]-3,3'-diyl)bis[phenyl-  
(9CI) (CA INDEX NAME)

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Agrawal, A	1991	3	765	Chem Mater	HCAPLUS
Agrawal, A	1992	4	95	Chem Mater	HCAPLUS
Agrawal, A	1996	8	579	Chem Mater	HCAPLUS
Agrawal, A	1992	96	2837	J Phys Chem	HCAPLUS
Agrawal, A	1993	26	895	Macromolecules	HCAPLUS
Chen, T	1996	8	607	Chem Mater	HCAPLUS
Clarkson, R	1930	52	2881	J Am Chem Soc	HCAPLUS
Concilio, S	2001	34	3607	Macromolecules	HCAPLUS
Gilchrist, T	1985			Heterocyclic Chemist	
Haas, G	1969	52	1202	Helv Chim Acta	HCAPLUS
Imai, Y	1975	13	2233	J Polym Sci, Polym C	HCAPLUS
Jen, A	1998	10	471	Chem Mater	HCAPLUS
Jenekhe, S	1997	9	409	Chem Mater	HCAPLUS
Johansson, N	1998	10	1136	Adv Mater	HCAPLUS
Kelley, C	1997		2701	J Chem Res Miniprint	
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Kim, J	2000	33	5880	Macromolecules	HCAPLUS
Kraft, A	1998	37	402	Angew Chem, Int Ed	
Kreyenschmidt, M	1995	28	4577	Macromolecules	HCAPLUS
Liu, M	1999	9	2201	J Mater Chem	HCAPLUS
Liu, Y	1999	11	27	Chem Mater	HCAPLUS
Ma, H	1999	11	2218	Chem Mater	HCAPLUS
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Norris, S	1976	9	496	Macromolecules	HCAPLUS
Parker, I	1994	65	1272	Appl Phys Lett	HCAPLUS
Pei, Q	1996	118	7416	J Am Chem Soc	HCAPLUS
Pommerehne, J	1995	7	551	Adv Mater	HCAPLUS
Royles, B	1994		355	J Chem Soc, Perkin T	HCAPLUS
Salbeck, J	1997	91	209	Synth Met	HCAPLUS
Steuber, F	2000	12	130	Adv Mater	HCAPLUS
Stille, J	1981	14	486	Macromolecules	HCAPLUS
Stille, J	1981	14	870	Macromolecules	HCAPLUS
Sutherlin, D	1985	18	2669	Macromolecules	HCAPLUS
Wang, Y	1999	9	1449	J Mater Chem	HCAPLUS
Weisburger, J	1950	72	4253	J Am Chem Soc	HCAPLUS
Wolfe, J	1976	9	489	Macromolecules	HCAPLUS
Wrasidlo, W	1976	9	505	Macromolecules	HCAPLUS

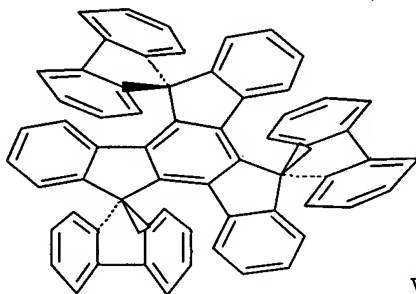
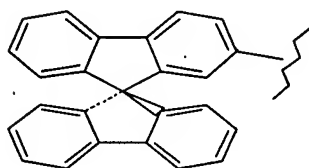
Wrasidlo, W	1976	9	512	Macromolecules	HCAPLUS
Wu, R	1996	61	6906	J Org Chem	HCAPLUS
Yamamoto, T	1996	118	3930	J Am Chem Soc	HCAPLUS
Zhang, X	1998	49	52	Acta Polym	HCAPLUS
Zhang, X	1999	32	7422	Macromolecules	HCAPLUS
Zhang, X	2000	33	2069	Macromolecules	HCAPLUS

=> d 144 bib abs hitstr retable tot

L44 ANSWER 1 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN  
 AN 2006:53697 HCAPLUS Full-text  
 DN 144:150137  
 TI Oligomeric derivatives of spirobifluorene, their preparation and use as  
 electroluminescent materials for molecular electronic devices  
 IN Bagala Rampazzo, Liliana; Fioravanti, Giulia;  
 Mattiello, Leonardo  
 PA Covion Organic Semiconductors G.m.b.H., Germany  
 SO PCT Int. Appl., 23 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 2

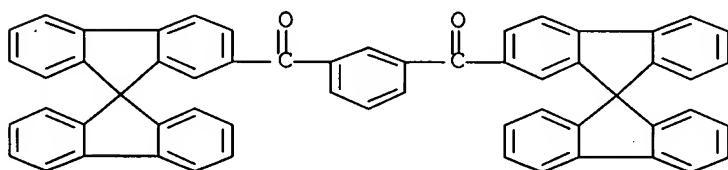
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PI	WO 2006005627	A1	20060119	WO 2005-EP7746	20050715 <--
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	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	EP 1765756	A1	20070328	EP 2005-763646	20050715 <--
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PRAI	IT 2004-RM352	A	20040715 <--		
	WO 2005-EP7746	W	20050715		
OS	CASREACT 144:150137; MARPAT 144:150137				
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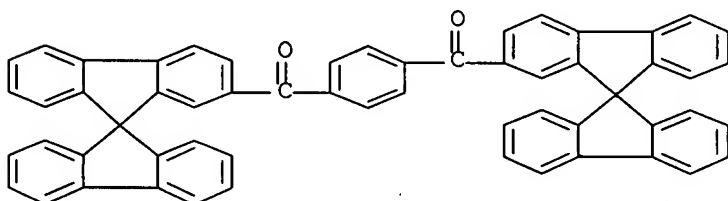


V

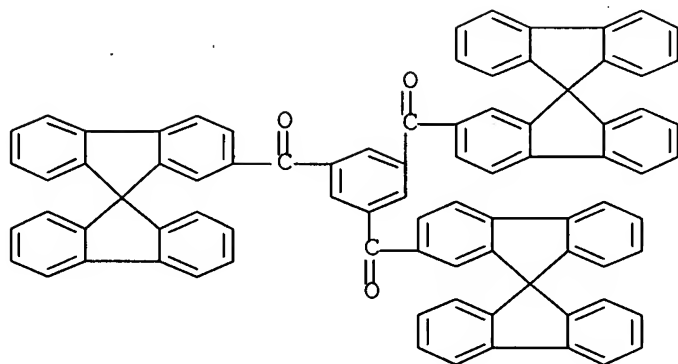
- AB Oligomeric derivs. of spirobifluorene are disclosed, as well as their preparation and (no data) use in the field of mol. electronics. Five example compds. were prepared (where R = 9,9'-spirobi[9H-fluorene]-2-yl): trans-RCOCH:CHCOR (I), 1,3-C<sub>6</sub>H<sub>4</sub>(COR)<sub>2</sub> (II), 1,4-C<sub>6</sub>H<sub>4</sub>(COR)<sub>2</sub> (III), 1,3,5-C<sub>6</sub>H<sub>3</sub>(COR)<sub>3</sub> (IV), and spirotruxene (V). Claimed uses include organic electroluminescence, particularly for OLEDs, especially blue-light OLEDs and triplet-state emitters, mol. switching components, nonlinear optics, mol.-based computational systems, field-effect transistors, neg. differential resistance semiconductors, as mol. magnets, in mol. biol., and in nanotechnologies. Compds. I, II, III, and IV were all prepared by Friedel-Crafts acylation of 9,9'-spirobifluorene with either fumaryl chloride, isophthaloyl chloride, terephthaloyl chloride, or 1,3,5-benzenetricarbonyl chloride, using AlCl<sub>3</sub> in CH<sub>2</sub>Cl<sub>2</sub> at 15° to room temperature. Spirotruxene V was prepared in 78% yield by lithiation of 2-bromobiphenyl with BuLi, reaction of the obtained organolithium (in excess) with the triketone truxenone, and cyclization of the isomeric product mixture with HCl in refluxing AcOH. Radical anions and the corresponding E° values were determined as follows (V vs. SCE): cis-RCH:CHR (comparison compound from EP 882082) -1.95, I -1.18, II -1.50, III -1.40, IV -1.48, and V -2.55 V.
- IT 874099-72-6P 874099-73-7P 874099-74-8P  
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (example compound; preparation of spirobifluorene oligomer derivs. as electroluminescent materials for mol. electronic devices)
- RN 874099-72-6 HCAPLUS
- CN Methanone, 1,3-phenylenebis[9,9'-spirobi[9H-fluoren]-2-yl]- (9CI) (CA INDEX NAME)



- RN 874099-73-7 HCAPLUS
- CN Methanone, 1,4-phenylenebis[9,9'-spirobi[9H-fluoren]-2-yl]- (9CI) (CA INDEX NAME)



- RN 874099-74-8 HCAPLUS
- CN Methanone, 1,3,5-benzenetriyltris[9,9'-spirobi[9H-fluoren]-2-yl]- (9CI) (CA INDEX NAME)



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bagala' Rampazzo, L	2004			WO 2004013080 A	HCAPLUS
Covion Organic Semicond	2004			DE 10317556 A1	HCAPLUS
Vestweber, H	2005			WO 2005034260 A	HCAPLUS

L44 ANSWER 2 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2005:982280 HCAPLUS Full-text

DN 143:276848

TI Organic electronic devices

IN Gerhard, Anja; Vestweber, Horst; Stoessel, Philipp

PA Covion Organic Semiconductors G.m.b.H., Germany

SO Ger. Offen., 12 pp.

CODEN: GWXXBX

DT Patent

LA German

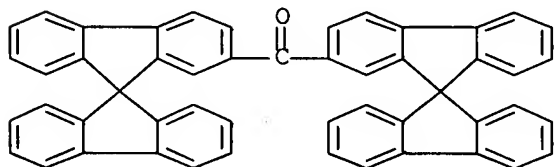
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 102004008304	A1	20050908	DE 2004-102004008304	20040220 <--
	WO 2005084081	A1	20050909	WO 2005-EP1709	20050218 <--
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MR, NE, SN, TD, TG

EP 1716724 A1 20061102 EP 2005-707510 20050218 <--  
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EP 1716725 A1 20061102 EP 2005-715402 20050218 <--  
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IE, SI, LT, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS  
CN 1922929 A 20070228 CN 2005-80005492 20050218 <--  
CN 1922930 A 20070228 CN 2005-80005497 20050218 <--  
US 2007164273 A1 20070719 US 2006-589847 20060818 <--  
US 2007170419 A1 20070726 US 2006-590037 20060818 <--  
PRAI DE 2004-102004008304 A 20040220 <--  
WO 2005-EP1709 W 20050218  
WO 2005-EP1710 W 20050218  
OS MARPAT 143:276848  
AB Organic electronic devices comprising an anode, a cathode, and  $\geq 1$  organic layer are described in which the device does not incorporate any phosphorescent emitters and the organic layer incorporates  $\geq 1$  non-emitting compound having a mol. weight of 150-10000 g/mol and including structural units described by the general formula Y:X (Y may be the same or different at each occurrence and is selected from C, N, P, As, Sb, Bi, S, Se or Te; X may be the same or different at each occurrence and is selected from O, S, Se, Te, or NR; and R may be the same or different at each occurrence and is selected from C1-22 organic residues, OH, or NH). The non-emitting compds. may serve as an electron-transporting material. The devices may be organic thin-film transistors, organic field-effect transistors, organic solar cells, organic photoreceptors, organic lasers, or, especially, organic electroluminescent devices.  
IT 782504-07-8  
RL: DEV (Device component use); USES (Uses)  
(organic electronic devices with unsatd. structural unit-containing electron-transporting materials)  
RN 782504-07-8 HCAPLUS  
CN Methanone, bis(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



L44 ANSWER 3 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN  
AN 2005:523578 HCAPLUS Full-text  
DN 143:50534  
TI Organic electroluminescent element  
IN Vestweber, Horst; Gerhard, Anja; Stoessel, Philipp  
PA Covion Organic Semiconductors G.m.b.H., Germany  
SO PCT Int. Appl., 28 pp.  
CODEN: PIXXD2  
DT Patent  
LA German  
FAN.CNT 1

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PI	WO 2005054403	A1	20050616	WO 2004-EP13312	20041124 <--
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	EP 1697483	A1	20060906	EP 2004-798062	20041124 <--
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	CN 1894358	A	20070110	CN 2004-80036011	20041124 <--
	JP 2007522645	T	20070809	JP 2006-541841	20041124 <--
	US 2007134510	A1	20070614	US 2006-581005	20060526 <--
PRAI	DE 2003-10357315	A	20031205	<--	
	WO 2004-EP13312	W	20041124	<--	
OS	MARPAT 143:50534				

AB Organic electroluminescent devices comprising an anode, a cathode,  $\geq 1$  emitting layer, which consists of  $\geq 1$  matrix material which is doped with  $\geq 1$  phosphorescent emitter, and  $\geq 1$  hole-blocking layer are described which employ compds. including units described by the general formula Y:X (X has  $\geq 1$  nonbonded electron pair and is selected from NR, O, S, Se, or Te; R = C1-22 organic residue, OH, OR, NH<sub>2</sub> NHR', and NR'<sub>2</sub>; R' = H or C1-20 organic residue; and Y = C, P, As, Sb, Bi, S, Se, or Te) as the hole-blocking material, the material being selected so that the hole-blocking and matrix materials are not identical. The use of the compds. in other electronic devices, including organic field-effect and thin-film transistors, organic integrated circuits, organic solar cells, or organic laser diodes is also described, as are the devices.

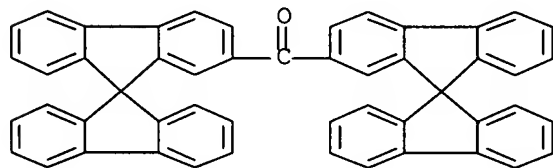
IT 782504-07-8 782504-10-3

RL: DEV (Device component use); USES (Uses)

(devices with hole-blocking materials incorporating double bonded structural units)

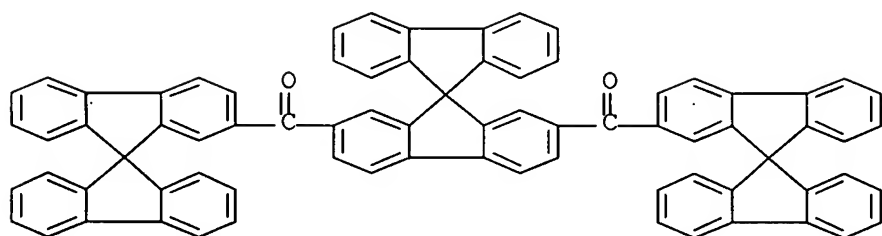
RN 782504-07-8 HCAPLUS

CN Methanone, bis(9,9'-spirobi[9H-fluorene]-2-yl)- (CA INDEX NAME)



RN 782504-10-3 HCAPLUS

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,7-diylbis[9,9'-spirobi[9H-fluorene]-2-yl)- (9CI) (CA INDEX NAME)



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon	1998	1998		PATENT ABSTRACTS OF	
Konica Corporation	2003			EP 1353388 A	HCAPLUS
Oki Electric Ind Co Ltd	1998			JP 10231479 A	HCAPLUS
Salbeck, J	1997	91	209	SYNTHETIC METALS	HCAPLUS
Sato, H	2002			US 2002125818 A1	
Spreitzer, H	2000	4105	125	PROCEEDINGS OF THE S	
Tokito, S	2000	363	290	THIN SOLID FILMS	
Watanabe, T	2002			US 2002015859 A1	HCAPLUS

L44 ANSWER 4 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2005:493816 HCAPLUS Full-text

DN 143:34908

TI Organic electroluminescent element hole-blocking layers with six-membered ring unit-containing compounds and spirobifluorene derivatives and electronic devices using them

IN Vestweber, Horst; Gerhard, Anja; Stoessel, Philipp

PA Covion Organic Semiconductors G.m.b.H., Germany

SO PCT Int. Appl., 38 pp.

CODEN: PIXXD2

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	WO 2005053055	A1	20050609	WO 2004-EP13314	20041124 <--
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	EP 1687857	A1	20060809	EP 2004-803245	20041124 <--
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	JP 2007520875	T	20070726	JP 2006-540365	20041124 <--
	US 2007051944	A1	20070308	US 2006-580491	20060523 <--
PRAI	DE 2003-10356099	A	20031127	<--	

WO 2004-EP13314 W 20041124 &lt;--

OS MARPAT 143:34908

AB Organic electroluminescent devices comprising an anode, a cathode, and  $\geq 1$  emitting layer, which consists of a matrix material which is doped with  $\geq 1$  phosphorescent emitter, are described which employ compds. including units based on six-membered rings formed from C and/or N atoms, especially triazines, pyrimidines, pyridazines, and pyrazines, as materials for a hole-blocking layer between the emitting layer and the cathode. Compds., which may be employed in the devices, are described which comprise spirobifluorene derivs. with  $\geq 1$  triazine unit bonded to them, optionally along with other six-membered ring-containing substituents. The use of the design of the electroluminescent devices in other electronic devices, including organic transistors, organic integrated circuits, organic solar cells, organic laser diodes, or photoreceptors, is also described. Organic transistors, organic integrated circuits, organic solar cells, organic laser diodes, or photoreceptors.

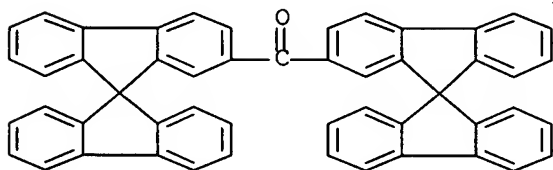
IT 782504-07-8

RL: DEV (Device component use); USES (Uses)

(organic electroluminescent element with hole-blocking layers formed from compds. including six-membered rings and spirobifluorene derivs. and electronic devices using them)

RN 782504-07-8 HCAPLUS

CN Methanone, bis(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
===== Anon	2003	2003		PATENT ABSTRACTS OF	
Fink, R	2002			US 6352791 B1	HCAPLUS
Hayoz, P	2004			WO 2004077885 A	HCAPLUS
Hoechst Ag	1996			DE 4446818 A1	HCAPLUS
Hu, N	2001			US 6229012 B1	HCAPLUS
Jean-Hugues, F	2004	69	1762	JOURNAL OF ORGANIC C	
Nishi, T	2002			US 2002034659 A1	HCAPLUS
Toray Ind Inc	2003			JP 2003086381 A	HCAPLUS
Wu, C	2002	81	577	APPLIED PHYSICS LETT	HCAPLUS
Xerox Corporation	2004			EP 1385221 A	HCAPLUS

L44 ANSWER 5 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2005:493813 HCAPLUS Full-text

DN 143:34907

TI Organic electroluminescent elements

IN Gerhard, Anja; Vestweber, Horst; Stoessel, Philipp

PA Covion Organic Semiconductors G.m.b.H., Germany

SO PCT Int. Appl., 29 pp.

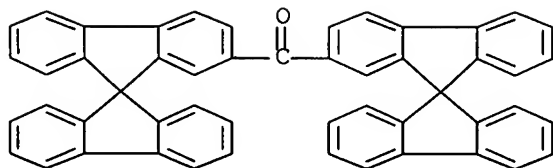
CODEN: PIXXD2

DT Patent

LA German

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005053051	A1	20050609	WO 2004-EP13315	20041124 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	DE 10355381	A1	20050630	DE 2003-10355381	20031125 <--
	DE 102004006622	A1	20050825	DE 2004-102004006622	20040210 <--
	DE 102004015933	A1	20051020	DE 2004-102004015933	20040401 <--
	EP 1687859	A1	20060809	EP 2004-803246	20041124 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS				
	CN 1898816	A	20070117	CN 2004-80034876	20041124 <--
	JP 2007512692	T	20070517	JP 2006-540366	20041124 <--
	WO 2005078818	A2	20050825	WO 2005-EP1313	20050210 <--
	WO 2005078818	A3	20051110		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, SM RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	EP 1714332	A2	20061025	EP 2005-707296	20050210 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS				
	CN 1918723	A	20070221	CN 2005-80004389	20050210 <--
	JP 2007522661	T	20070809	JP 2006-552538	20050210 <--
	US 2007114915	A1	20070524	US 2006-579947	20060522 <--
	US 2007122653	A1	20070531	US 2006-588918	20060809 <--
PRAI	DE 2003-10355381	A	20031125	<--	
	DE 2004-102004006622	A	20040210	<--	
	DE 2004-102004015933	A	20040401	<--	
	WO 2004-EP13315	W	20041124	<--	
	WO 2005-EP1313	W	20050210		
AB	Organic electroluminescent devices comprising an anode, a cathode and ≥ emitting layer are described in which the emitting layer, which consists of a matrix material which is doped with ≥1 phosphorescent emitter, directly adjoins an elec. conductive layer on the anode side. Solar cells and laser diodes with similar structures are also described.				
IT	782504-07-8				
	RL: DEV (Device component use); USES (Uses)				
	(organic semiconductor devices with doped emitting layers adjacent to conductive layers)				
RN	782504-07-8 HCAPLUS				
CN	Methanone, bis(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)				



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Cocchi, M	2004	84	1052	APPLIED PHYSICS LETT	HCAPLUS
David, L	2003			US 2003096138 A1	HCAPLUS
Eriyama, Y	2003			WO 03072681 A	HCAPLUS
Eriyama, Y	2004			US 2004106006 A1	HCAPLUS
Jung-Soo, K	2004			WO 2004016709 A	HCAPLUS
LI, H	2003	18	278	SEMICONDUCTOR SCIENC	HCAPLUS
Salbeck, J	1997	91	209	SYNTHETIC METALS	HCAPLUS
Seo, S	2002			US 2002028349 A1	
The Trustees Of Princet	2003			WO 03001569 A	HCAPLUS
Tokito, S	2003	4	105	ORGANIC ELECTRONICS	

L44 ANSWER 6 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2005:395412 HCAPLUS Full-text

DN 142:455291

TI Organic semiconductors incorporating triplet emitters and ther uses and electronic devices employing them

IN Heun, Susanne; Scheurich, Rene; Buesing, Arne; Falcou, Aurelie; Gerhard, Anja; Stoessel, Philipp; Vestweber, Horst

PA Covion Organic Semiconductors G.m.b.H., Germany

SO PCT Int. Appl., 56 pp.

CODEN: PIXXD2

DT Patent

LA German

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2005040302	A1	20050506	WO 2004-EP11888	20041021 <--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
DE 10349033	A1	20050525	DE 2003-10349033	20031022 <--
DE 102004003008	A1	20051006	DE 2004-102004003008	20040120 <--
EP 1675930	A1	20060705	EP 2004-790695	20041021 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
CN 1894357	A	20070110	CN 2004-80031198	20041021 <--
JP 2007517079	T	20070628	JP 2006-536042	20041021 <--

US 2007080343 A1 20070412 US 2006-576920 20060424 <--  
 PRAI DE 2003-10349033 A 20031022 <--  
 DE 2004-102004003008 A 20040120 <--  
 WO 2004-EP11888 W 20041021 <--

AB Organic semiconductors are described which comprise  $\geq 1$  polymer,  $\geq 1$  structural units including double bonds, and  $\geq 1$  triplet emitter (with certain restrictions). Electronic devices employing the materials in active layers are also described. The use of the materials in organic light-emitting diodes, organic lasers, and organic solar cells, and for nonlinear optical applications, is also described.

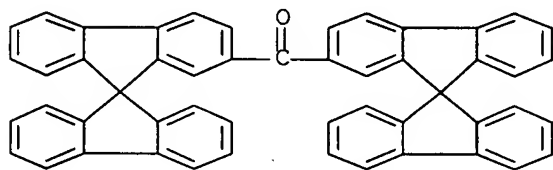
IT 782504-07-8

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(organic semiconductors incorporating triplet emitters and their uses and electronic devices employing them)

RN 782504-07-8 HCAPLUS

CN Methanone, bis(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



# RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Becker, H	2003			WO 03020790 A2	HCAPLUS
Cleave, V	1999	11	285	ADV MATER	HCAPLUS
Marrocco, M	2002			US 2002028347 A1	HCAPLUS
Treacher, K	2002			WO 02077060 A1	HCAPLUS

L44 ANSWER 7 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2005:324466 HCAPLUS Full-text

DN 142:400277

TI Organic electroluminescent element

IN Vestweber, Horst; Gerhard, Anja; Stoessel, Philipp

PA Covion Organic Semiconductors G.m.b.H., Germany

SO PCT Int. Appl., 31 pp.

CODEN: PIXXD2

DT Patent

LA German

FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005034260	A1	20050414	WO 2004-EP10379	20040916 <--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,				

EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE,  
SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,  
SN, TD, TG

DE 10343910 A1 20050512 DE 2003-10343910 20030919 <--  
DE 10355381 A1 20050630 DE 2003-10355381 20031125 <--  
EP 1668718 A1 20060614 EP 2004-765279 20040916 <--  
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK  
CN 1853288 A 20061025 CN 2004-80027129 20040916 <--  
JP 2007506270 T 20070315 JP 2006-526586 20040916 <--  
US 2007037010 A1 20070215 US 2006-571305 20060309 <--  
PRAI DE 2003-10343910 A 20030919 <--  
DE 2003-10355381 A 20031125 <--  
WO 2004-EP10379 W 20040916 <--

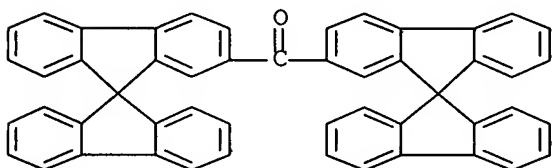
AB Organic electroluminescent devices formed from an anode, a cathode, and a layer formed from  $\geq 1$  matrix material which has a structural unit described by the formula Y:X (X has  $\geq 1$  nonbonded electron pair and is selected from N, O, S, Se, or Te; and Y = C, P, As, Sb, Bi, S, Se, or Te) doped with  $\geq 1$  phosphorescent emitter are described in which the doping zone of the emitter in the matrix extends perpendicular to the layer only over a portion of the matrix layer.

IT 782504-07-8 782504-10-3

RL: DEV (Device component use); USES (Uses)  
(organic electroluminescent devices)

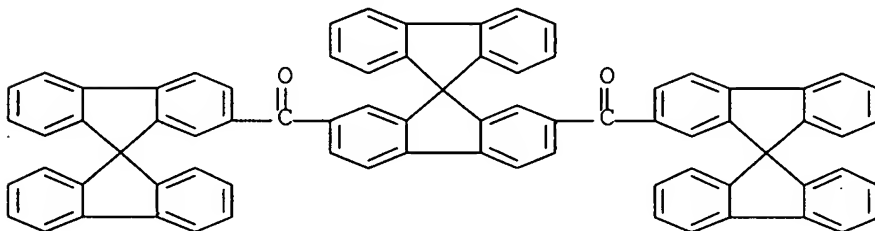
RN 782504-07-8 HCAPLUS

CN Methanone, bis(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



RN 782504-10-3 HCAPLUS

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,7-diylbis[9,9'-spirobi[9H-fluoren]-2-yl]- (9CI) (CA INDEX NAME)



#### RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Adachi, C	2001	2	37	ORGANIC ELECTRONICS	HCAPLUS



Baldo, M	1998	395	151	NATURE	HCAPLUS
Eastman Kodak Co	2003			EP 1286569 A	HCAPLUS
Neoviewkolon Co Ltd	2004			WO 2004016709 A	HCAPLUS
Pioneer Corp	2003			EP 1308494 A	HCAPLUS
Salbeck, J	1997	91	209	SYNTHETIC METALS	HCAPLUS
Wu, C	2002	81	577	APPLIED PHYSICS LETT	HCAPLUS

L44 ANSWER 8 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2005:99763 HCAPLUS Full-text

DN 142:186261

TI Organic electroluminescent element

IN Gerhard, Anja; Stoessel, Philipp; Vestweber, Horst

PA Covion Organic Semiconductors GmbH, Germany

SO PCT Int. Appl., 31 pp.

CODEN: PIXXD2

DT Patent

LA German

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2005011013	A1	20050203	WO 2004-EP8070	20040720 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	EP 1656706	A1	20060517	EP 2004-741150	20040720 <--
	R: DE, FR, GB, NL				
	CN 1826701	A	20060830	CN 2004-80021255	20040720 <--
	JP 2006528421	T	20061214	JP 2006-520763	20040720 <--
	US 2006175958	A1	20060810	US 2006-565488	20060411 <--
PRAI	DE 2003-10333232	A	20030721	<--	
	WO 2004-EP8070	W	20040720	<--	

AB Organic electroluminescent devices are described which comprise a cathode, an anode, and  $\geq 2$  emitting layers which emit different wavelengths of light, with  $\geq 1$  of the emitting layers incorporating  $\geq 1$  phosphorescent emitter.

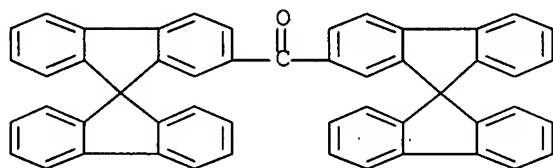
IT 782504-07-8

RL: DEV (Device component use); USES (Uses)

(emitting layer host; organic electroluminescent devices with multiple emitting layers including at least a phosphorescent material-containing layer)

RN 782504-07-8 HCAPLUS

CN Methanone, bis(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Cheng, G	2003	82	4224	APPLIED PHYSICS LETT	HCAPLUS
Forrest, S	2000			US 6166489 A	HCAPLUS
Forrest, S	2002			WO 02074015 A	HCAPLUS
Fugono, M	2002			US 2002125818 A1	
Raymond, B	2001			WO 0129909 A	HCAPLUS
Semiconductor Energy La	2001			EP 1154498 A	HCAPLUS
Univ Princeton	1999			WO 9926730 A	

L44 ANSWER 9 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2004:906077 HCAPLUS Full-text

DN 141:386129

TI Mixtures of matrix materials and organic semiconductors capable of emission, use of the same and electronic components containing the mixtures

IN Gerhard, Anja; Vestweber, Horst; Stoessel, Philipp; Heun, Susanne; Spreitzer, Hubert

PA Covion Organic Semiconductors G.m.b.H., Germany

SO PCT Int. Appl., 50 pp.

CODEN: PIXXD2

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004093207	A2	20041028	WO 2004-EP3861	20040413 <--
	WO 2004093207	A3	20050609		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	DE 10317556	A1	20041104	DE 2003-10317556	20030415 <--
	DE 10355358	A1	20050707	DE 2003-10355358	20031125 <--
	EP 1618170	A2	20060125	EP 2004-726968	20040413 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
	CN 1774491	A	20060517	CN 2004-80010244	20040413 <--
	JP 2006523740	T	20061019	JP 2006-505097	20040413 <--
	EP 1717291	A2	20061102	EP 2006-14637	20040413 <--
	EP 1717291	A3	20070321		
	R: DE, FR, GB, NL				
	US 2006208221	A1	20060921	US 2005-553114	20051014 <--
PRAI	DE 2003-10317556	A	20030415	<--	
	DE 2003-10355358	A	20031125	<--	
	EP 2004-726968	A3	20040413	<--	
	WO 2004-EP3861	W	20040413	<--	
AB	Mixts. are described which comprise a matrix material having a structural unit of the form C:Q (Q = O, S, Se, or N and is possessed of a nonbonded electron pair) and ≥1 emitting material which emits light when excited and which				

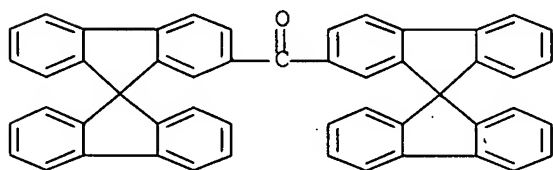
includes  $\geq 1$  element having an atomic number  $>20$ . The matrix material may comprise a compound including spirobifluorene derivative units (including spirobifluorene compds with substituted nitrogen heteroatoms replacing the ring carbons), and specific suitable compds. are also described. The matrix material may also comprise a polymer or dendrimer. The emitting material is preferably a complex of Mo, W, Rh, Ru, Os, Re, Ir, Pd, Pt, Ag, Au, or Eu. Organic electronic components (e.g., organic light-emitting devices, organic solar cells, organic FETs, organic integrated circuits; organic thin-film transistors, and organic laser diodes) are also described which employ the mixts.

IT 782504-07-8P

RL: DEV (Device component use); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses) (emitting mixts. of matrix materials and organometallic semiconductors and their use and electronic components containing mixts.)

RN 782504-07-8 HCAPLUS

CN Methanone, bis(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)

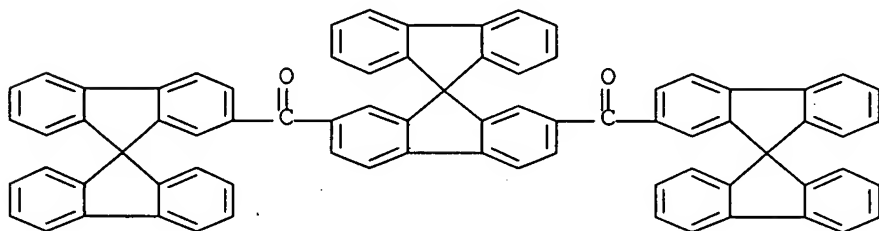


IT 782504-10-3P 782504-11-4P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses) (emitting mixts. of matrix materials and organometallic semiconductors and their use and electronic components containing mixts.)

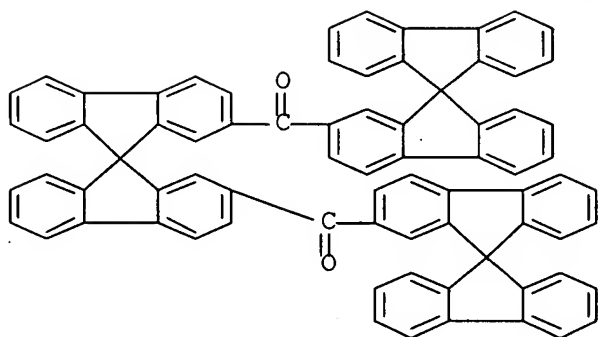
RN 782504-10-3 HCAPLUS

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,7-diylbis[9,9'-spirobi[9H-fluoren]-2-yl- (9CI) (CA INDEX NAME)



RN 782504-11-4 HCAPLUS

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[9,9'-spirobi[9H-fluoren]-2-yl- (9CI) (CA INDEX NAME)



L44 ANSWER 10 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2004:535763 HCAPLUS Full-text

DN 141:207599

TI Polyquinolines containing both spirobifluorene and cardofluorene units:  
Synthesis and characterization

AU Chen, Ching-Hsin; Shu, Ching-Fong

CS Department of Applied Chemistry, National Chiao Tung University, Hsin-Chu,  
30035, Taiwan

SO Journal of Polymer Science, Part A: Polymer Chemistry (2004),  
42(13), 3314-3322

CODEN: JPACEC; ISSN: 0887-624X

PB John Wiley & Sons, Inc.

DT Journal

LA English

AB Aromatic polyquinolines containing both spirobifluorene and cardofluorene moieties in the main chain were prepared with acid-catalyzed Friedlaender quinoline synthesis. The incorporation of these rigid nonplanar structures into the polymer backbone, which restricts segmental mobility, significantly increases both the glass transition temperature and thermal stability, while providing enhanced solubility as a result of a decrease in the degree of mol. packing and crystallinity. The optical and electrochem. properties of these polyquinolines were also studied. The low-lying LUMO energy level and quasireversible electrochem. reduction of these polyquinolines suggest their potential for use as electron- injecting/transporting materials in polymer light-emitting diodes.

IT 743430-76-4P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(synthesis and characterization of polyquinolines containing both  
spirobifluorene and cardofluorene units)

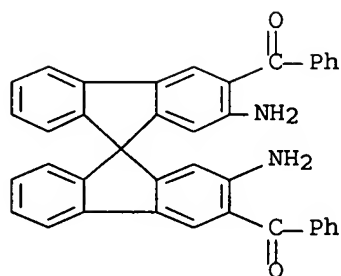
RN 743430-76-4 HCAPLUS

CN Ethanone, 1,1'-(9H-fluoren-9-ylidenedi-4,1-phenylene)bis-, polymer with  
(2,2'-diamino-9,9'-spirobi[9H-fluorene]-3,3'-diyl)bis[phenylmethanone]  
(9CI) (CA INDEX NAME)

CM 1

CRN 402934-28-5

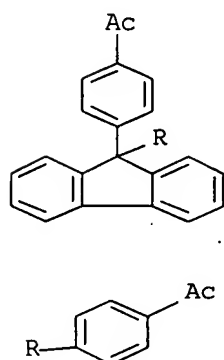
CMF C39 H26 N2 O2



CM 2

CRN 69461-74-1

CMF C29 H22 O2



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Agrawal, A	1991	3	765	Chem Mater	HCAPLUS
Agrawal, A	1992	4	95	Chem Mater	HCAPLUS
Agrawal, A	1996	8	579	Chem Mater	HCAPLUS
Agrawal, A	1993	26	895	Macromolecules	HCAPLUS
Akcelrud, L	2003	28	875	Prog Polym Sci	HCAPLUS
Alam, M	2001	105	2479	J Phys Chem B	HCAPLUS
Alam, M	2003	36	6577	Macromolecules	HCAPLUS
Babel, A	2003	125	13656	J Am Chem Soc	HCAPLUS
Chiang, C	2002	14	682	Chem Mater	HCAPLUS
Chou, C	2002	40	3615	J Polym Sci Part A:	HCAPLUS
Concilio, S	2001	34	3607	Macromolecules	HCAPLUS
Eaton, D	1998	60	1107	Pure Appl Chem	
Gilchrist, T	1985			Heterocyclic Chemist	
Gubbelmans, E	2003	39	969	Eur Polym J	HCAPLUS
Haas, G	1969	52	1202	Helv Chim Acta	HCAPLUS
Harris, R	1978	19	7	Polym Prepr	HCAPLUS
Imai, Y	1975	13	2233	J Polym Sci Polym Ch	HCAPLUS
Jen, A	1998	10	471	Chem Mater	HCAPLUS
Jenekhe, S	1997	9	409	Chem Mater	HCAPLUS
Jenekhe, S	1994	265	765	Science	HCAPLUS
Kim, J	2000	33	5880	Macromolecules	HCAPLUS

Korshak, V	1974	11	45	J Macromol Sci Rev M	HCAPLUS
Kruger, H	2003	204	1607	Macromol Chem Phys	
Kulkarni, A	2003	36	5285	Macromolecules	HCAPLUS
Lee, T	2002	40	1831	J Polym Sci Part A:	HCAPLUS
Liu, Y	2001	11	1800	J Mater Chem	HCAPLUS
Ma, H	1999	11	2218	Chem Mater	HCAPLUS
Milstein, D	1979	44	1613	J Org Chem	HCAPLUS
Norris, S	1976	9	496	Macromolecules	HCAPLUS
Osaheni, J	1994	27	739	Macromolecules	HCAPLUS
Parker, I	1994	65	1272	Appl Phys Lett	HCAPLUS
Pommerehne, J	1995	7	551	Adv Mater	HCAPLUS
Salbeck, J	1997	125	121	Macromol Symp	
Stenger-Smith, J	2000	38	2824	J Polym Sci Part A:	HCAPLUS
Stevens, M	1990		124	Polymer Chemistry: A	
Stille, J	1981	14	486	Macromolecules	HCAPLUS
Stille, J	1981	14	870	Macromolecules	HCAPLUS
Sutherlin, D	1985	18	2669	Macromolecules	HCAPLUS
Sutherlin, D	1985	18	2669	Macromolecules	HCAPLUS
Tong, H	2002	23	877	Macromol Rapid Commu	HCAPLUS
Tong, H	2002	35	7169	Macromolecules	HCAPLUS
Tonzola, C	2002	14	1086	Adv Mater	HCAPLUS
Wolfe, J	1976	9	489	Macromolecules	HCAPLUS
Wu, F	2002	12	2893	J Mater Chem	HCAPLUS
Wu, R	1996	61	6906	J Org Chem	HCAPLUS
Wu, S	2003	41	1160	J Polym Sci Part A:	HCAPLUS
Zhan, X	2003	77	375	Appl Phys A	HCAPLUS
Zhan, X	2002	35	2529	Macromolecules	HCAPLUS
Zhang, X	1999	32	7422	Macromolecules	HCAPLUS
Zhu, Y	2003	36	8958	Macromolecules	HCAPLUS

L44 ANSWER 11 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2002:26831 HCAPLUS Full-text

DN 136:232651

TI Synthesis and Characterization of New Polyquinolines Containing  
9,9'-Spirobifluorene Units

AU Chiang, Chi-Long; Shu, Ching-Fong

CS Department of Applied Chemistry, National Chiao Tung University, Hsin-Chu,  
30035, Taiwan

SO Chemistry of Materials (2002), 14(2), 682-687

CODEN: CMATEX; ISSN: 0897-4756

PB American Chemical Society

DT Journal

LA English

AB Polyquinolines, which contain 9,9'-spirobifluorene units in the main chain, were synthesized via the acid-catalyzed Friedlander condensation reactions of bis(o-aminoketone) with bisacetyl monomers. In the spiro-fused bifluorene moiety, the two mutually perpendicular fluorene rings were connected via a common tetracoordinated carbon atom. This structural feature leads to polymers that possess high thermal stability and good solubility in common organic solvents. The polyquinolines have similar lowest energy transitions that can be attributed to a  $\pi$ - $\pi^*$  transition with  $\lambda_{\text{max}}$  values in the 363-385 nm range and exhibit blue emission. A model compound was synthesized to demonstrate that the tetrahedral bonding carbon at the center of the spiro moiety could serve as a conjugation interrupt to effectively control the conjugation length of the polymers. The electrochem. behaviors of these polymers were investigated by cyclic voltammetry. The reversible reduction and low-lying LUMO energy level suggest that some of the polyquinolines might have potential for use as materials for electron injection and transport in polymer LEDs.

IT 402934-29-6P 402934-33-2P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (Friedlander condensation polymerization synthesis of 9,9'-spirobifluorene-  
 containing polyquinolines and their optical, elec., and thermal properties)

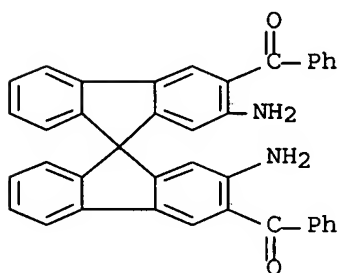
RN 402934-29-6 HCAPLUS

CN Ethanone, 1,1'-(oxydi-4,1-phenylene)bis-, polymer with  
 (2,2'-diamino-9,9'-spirobi[9H-fluorene]-3,3'-diyl)bis[phenylmethanone]  
 (9CI) (CA INDEX NAME)

CM 1

CRN 402934-28-5

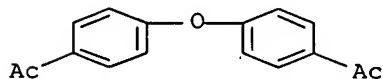
CMF C39 H26 N2 O2



CM 2

CRN 2615-11-4

CMF C16 H14 O3



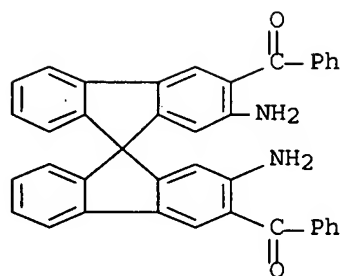
RN 402934-33-2 HCAPLUS

CN Ethanone, 1,1'-(9,9'-spirobi[9H-fluorene]-2,2'-diyl)bis-, polymer with  
 (2,2'-diamino-9,9'-spirobi[9H-fluorene]-3,3'-diyl)bis[phenylmethanone]  
 (9CI) (CA INDEX NAME)

CM 1

CRN 402934-28-5

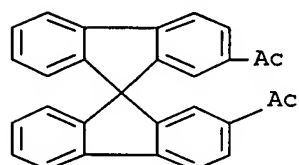
CMF C39 H26 N2 O2



CM 2

CRN 22824-83-5

CMF C29 H20 O2



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Agrawal, A	1991	3	765	Chem Mater	HCAPLUS
Agrawal, A	1992	4	95	Chem Mater	HCAPLUS
Agrawal, A	1996	8	579	Chem Mater	HCAPLUS
Agrawal, A	1992	96	2837	J Phys Chem	HCAPLUS
Agrawal, A	1993	26	895	Macromolecules	HCAPLUS
Chen, T	1996	8	607	Chem Mater	HCAPLUS
Clarkson, R	1930	52	2881	J Am Chem Soc	HCAPLUS
Concilio, S	2001	34	3607	Macromolecules	HCAPLUS
Gilchrist, T	1985			Heterocyclic Chemist	
Haas, G	1969	52	1202	Helv Chim Acta	HCAPLUS
Imai, Y	1975	13	2233	J Polym Sci, Polym C	HCAPLUS
Jen, A	1998	10	471	Chem Mater	HCAPLUS
Jenekhe, S	1997	9	409	Chem Mater	HCAPLUS
Johansson, N	1998	10	1136	Adv Mater	HCAPLUS
Kelley, C	1997		2701	J Chem Res Miniprint	
Kim, J	1999	32	2065	Macromolecules	HCAPLUS
Kim, J	2000	33	5880	Macromolecules	HCAPLUS
Kraft, A	1998	37	402	Angew Chem, Int Ed	
Kreyenschmidt, M	1995	28	4577	Macromolecules	HCAPLUS
Liu, M	1999	9	2201	J Mater Chem	HCAPLUS
Liu, Y	1999	11	27	Chem Mater	HCAPLUS
Ma, H	1999	11	2218	Chem Mater	HCAPLUS
Mitschke, U	2000	10	1471	J Mater Chem	HCAPLUS
Norris, S	1976	9	496	Macromolecules	HCAPLUS
Parker, I	1994	65	1272	Appl Phys Lett	HCAPLUS
Pei, Q	1996	118	7416	J Am Chem Soc	HCAPLUS
Pommerehne, J	1995	7	551	Adv Mater	HCAPLUS



Royles, B	1994		355	J Chem Soc, Perkin T	HCAPLUS
Salbeck, J	1997	91	209	Synth Met	HCAPLUS
Steuber, F	2000	12	130	Adv Mater	HCAPLUS
Stille, J	1981	14	486	Macromolecules	HCAPLUS
Stille, J	1981	14	870	Macromolecules	HCAPLUS
Sutherlin, D	1985	18	2669	Macromolecules	HCAPLUS
Wang, Y	1999	9	1449	J Mater Chem	HCAPLUS
Weisburger, J	1950	72	4253	J Am Chem Soc	HCAPLUS
Wolfe, J	1976	9	489	Macromolecules	HCAPLUS
Wrasidlo, W	1976	9	505	Macromolecules	HCAPLUS
Wrasidlo, W	1976	9	512	Macromolecules	HCAPLUS
Wu, R	1996	61	6906	J Org Chem	HCAPLUS
Yamamoto, T	1996	118	3930	J Am Chem Soc	HCAPLUS
Zhang, X	1998	49	52	Acta Polym	HCAPLUS
Zhang, X	1999	32	7422	Macromolecules	HCAPLUS
Zhang, X	2000	33	2069	Macromolecules	HCAPLUS

L44 ANSWER 12 OF 12 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1996:516308 HCAPLUS Full-text

DN 125:222229

TI Analogs of Cinchona alkaloids incorporating a 9,9'-spirobifluorene moiety

AU Winter Werner, Barbara; Diederich, Francois; Gramlich, Volker

CS Laboratorium Organische Chemie, Eidgenoessische Technische Hochschule  
Zuerich, Zurich, CH-8092, Switz.

SO Helvetica Chimica Acta (1996), 79(5), 1338-1360

CODEN: HCACAV; ISSN: 0018-019X

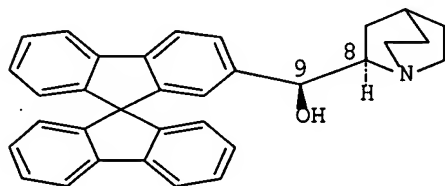
PB Verlag Helvetica Chimica Acta

DT Journal

LA English

OS CASREACT 125:222229

GI



I

AB The Cinchona alkaloid analog ( $\pm$ )-I was prepared by reacting lithiated 2-bromo-9,9'-spirobifluorene with ( $\pm$ )-(2-ethoxycarbonyl)quinucidine, followed by diastereoselective reduction with DIBAL-H. For the optical resolution of ( $\pm$ )-I, a chiral stationary phase for HPLC was prepared by covalently bonding quinine via a thiol spacer to a silica-gel surface. The enantiomer separation was accomplished at an  $\alpha = 1.61$  with ( $\pm$ )-I being eluted last, in agreement with  $^1\text{H}$ -NMR studies in  $\text{CDCl}_3$  which showed that (+)-I underwent a more stable host-guest association with quinine than (-)-I.  $^1\text{H}\{^1\text{H}\}$ -NOE difference spectra of the host-guest assocns. with quinine in  $\text{CDCl}_3$ , combined with computer-model exams., allowed the assignment of the absolute configurations as (+)-(8R,9S)- and (-)-(8S,9R)-I. A detailed conformational anal. displayed excellent agreement between the computational methods and  $^1\text{H}\{^1\text{H}\}$ -NOE difference spectra. (-)- And (+)-I differ in their conformational preference from their natural counterparts quinine and quinidine. Whereas the natural alkaloids prefer the open conformation, with the quinucidine N-atom pointing away from the quinoline ring, analog ( $\pm$ )-I adopts preferentially a closed

conformation in which the quinuclidine N atom points into the cleft of the 9,9'-spirobifluorene moiety. Since the basic quinuclidine N atom in the closed conformation is sterically shielded from forming strong H-bonds, the new Cinchona alkaloid analogs form less stable host-guest assocns. via H-bonding than quinine or quinidine.

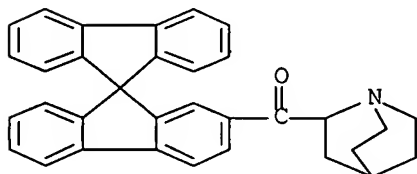
IT 181313-16-6P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation and conformation of Cinchona alkaloid analogs containing spirobifluorene moiety)

RN 181313-16-6 HCAPLUS

CN Methanone, 1-azabicyclo[2.2.2]oct-2-yl-9,9'-spirobi[9H-fluoren]-2-yl-(9CI) (CA INDEX NAME)



IT 181313-21-3P 181491-83-8P

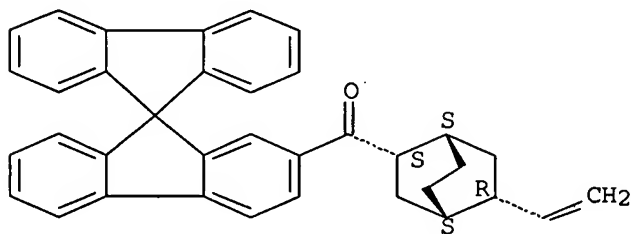
RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation and conformation of Cinchona alkaloid analogs containing spirobifluorene moiety)

RN 181313-21-3 HCAPLUS

CN Methanone, (5-ethenylbicyclo[2.2.2]oct-2-yl)-9,9'-spirobi[9H-fluoren]-2-yl-, [1S-(1 $\alpha$ ,2 $\beta$ ,4 $\alpha$ ,5 $\beta$ )]- (9CI) (CA INDEX NAME)

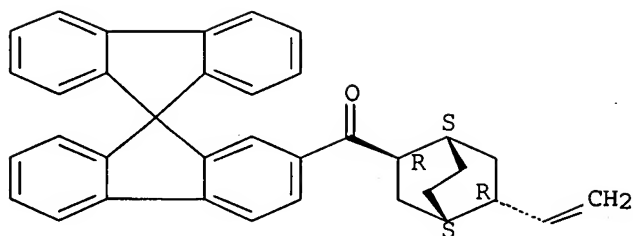
Absolute stereochemistry. Rotation (+).



RN 181491-83-8 HCAPLUS

CN Methanone, (5-ethenylbicyclo[2.2.2]oct-2-yl)-9,9'-spirobi[9H-fluoren]-2-yl-, [1S-(1 $\alpha$ ,2 $\alpha$ ,4 $\alpha$ ,5 $\beta$ )]- (9CI) (CA INDEX NAME)

Absolute stereochemistry.



=> => d 145 bib abs hitstr retable tot

L45 ANSWER 1 OF 5 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2007:383586 HCAPLUS Full-text

DN 146:401353

TI Methods and apparatus for vacuum purification of organic and organometallic compounds

IN Spreitzer, Hubert; Lueneburg, Wolfram

PA Merck Patent G.m.b.H., Germany

SO Ger., 13pp.

CODEN: GWXXAW

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 102005038211	B3	20070405	DE 2005-102005038211	20050812
PRAI	DE 2005-102005038211		20050812		

AB Methods for vacuum purification of organic and organometallic compds. are described which entail heating the solid or liquid material to be purified under vacuum to produce a vapor and condensing the vapor on a surface with a surface energy of <70 mN/m. The materials may be pharmaceuticals or materials for electronic applications.

IT 782504-07-8P

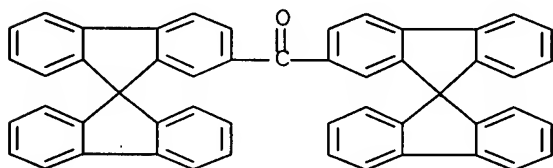
RL: PUR (Purification or recovery); PREP (Preparation)

(methods and apparatus for vacuum purification of organic and organometallic compds.

using condensers with low surface energies)

RN 782504-07-8 HCAPLUS

CN Methanone, bis(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



L45 ANSWER 2 OF 5 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2007:329395 HCAPLUS Full-text

DN 146:338012

TI Cyclometalated partially saturated heterocyclic transition metal

complexes, useful as phosphorescent materials for organic light-emitting devices

IN Buesing, Arne; Fortte, Rocco; Stoessel, Philipp; Vestweber, Horst; Heil, Holger; Parham, Amir

PA Merck Patent G.m.b.H., Germany

SO PCT Int. Appl., 49pp.

CODEN: PIXXD2

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2007031185	A1	20070322	WO 2006-EP8346	20060825
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW				
	RW:				
	AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				

DE 102005043165 A1 20070322 DE 2005-102005043165 20050912

PRAI DE 2005-102005043165 A 20050912

OS MARPAT 146:338012

AB Cyclometalated complexes M(L)<sub>n</sub>(L<sub>1</sub>)<sub>m</sub>(L<sub>2</sub>)<sub>o</sub> [1; M = transition metal, preferably M = Ir; L = cyclometalated N,C- or N,X-ligand, containing binding sites in two adjacent optionally substituted or annelated (hetero)cycles, preferably N-containing heterocycle is partially saturated, more preferably L = 1-aryl-3,4-dihydroisoquinoline; L<sub>1</sub> and L<sub>2</sub> = bidentate monoanionic ligands, preferably L<sub>1</sub>, L<sub>2</sub> =  $\beta$ -diketonato; for octahedral complexes, n = 2, n+m+o = 3 for square-planar complexes, n = 1, n+m+o = 2], useful as red-emitting phosphorescent materials for organic light-emitting devices, were prepared by cyclometalation of the ligand LH by metal salts with subsequent optional complexation with ligand precursors L<sub>1</sub>H, L<sub>2</sub>H. In an example, tris[2-(3,4-dihydro-1-isoquinolinyl)- $\kappa$ N]phenyl- $\kappa$ C]iridium (1, LH = 3,4-dihydro-1-phenylisoquinoline, n = 3, m = o = 0) was prepared by reaction of 10 equiv of the ligand precursor LH with 1 equiv of Na[Ir(acac)<sub>2</sub>Cl<sub>2</sub>] in ethyleneglycol at 180° for 4 h with 60% yield. In another example, a light-emitting device was manufactured, comprising 10 mol% of the prepared complex 1 in bis(9,9'-spirobifluoren-2-yl)methanone as an emitting layer, which exhibited deep-red electroluminescence at 5.9 V and lifetime of 9100 h at 1000 cd m<sup>-2</sup>, compared to lifetime of 8300 h at 1000 cd m<sup>-2</sup> in a device using non-hydrogenated 1-phenylisoquinoline ligand.

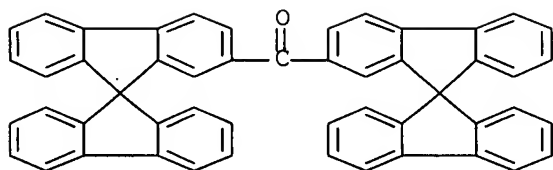
IT 782504-07-8

RL: TEM (Technical or engineered material use); USES (Uses)

(preparation of partially hydrogenated cyclometalated heterocyclic transition metal complexes as phosphorescent components for organic light-emitting devices)

RN 782504-07-8 HCAPLUS

CN Methanone, bis(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Spreitzer, H	2002			WO 02068435 A	

L45 ANSWER 3 OF 5 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2007:198315 HCAPLUS Full-text

DN 146:251980

TI Cyclometalated transition metal complexes featuring six-membered chelate rings as active components for electroluminescent devices

IN Schwaiger, Jochen

PA Merck Patent G.m.b.H., Germany

SO PCT Int. Appl., 44pp.

CODEN: PIXXD2

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	WO 2007019942	A1	20070222	WO 2006-EP7246	20060724
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	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				

DE 102005039064 A1 20070301 DE 2005-102005039064 20050818

PRAI DE 2005-102005039064 A 20050818

OS MARPAT 146:251980

AB Metal complexes  $[M(L)n(L1)m(L2)o]$  (1), preferably complexes  $[M(L)n(L1)m]$  [M = transition metal, preferably M = Ir; L = six-membered cyclometalated chelate ligand  $R1C(:A)Y(Q)$ , bound via C- or heteroatom of the cycle Q; R1 = C1-40-organyl; A = imino; Y = (substituted) methylene, CO, silylene, O, S, SO, SO<sub>2</sub>, Se, imino, phosphino, phosphinyl, arsino, arsinyl, boryl; A = O, Y = methide; L1 = anionic bidentate ligand, e.g. acetylacetonate; n = 1-3; m, o as required by metal valence], useful as stable light-emitting dopant for light-emitting devices, were prepared by cyclometalation of the corresponding imino- or ketone ligands with subsequent complexation with ligands L1, and optionally with L2. Complexes 1 were tested in non-optimized OLED devices. In an example, ligand L, N-methyl-(2-fluoro-1-naphthyl)(phenyl)ketimine was prepared by addition of PhMgBr with 2-fluoronaphthalenecarbonitrile and subsequent N-methylation; the ligand was cyclometalated by reaction with NaIr(acac)<sub>2</sub>Cl<sub>2</sub> affording dimer  $[(L-N,C8)4Ir2(\mu-Cl)2]$ , which upon reaction with

acacH yielded [(L-N,C8)2Ir(acac)] (1). In another example, emitting layer composed from bis(9,9'-spirobifluoren-2-yl)ketone, doped with 10% of 1, showed electroluminescence at 4.9 V with efficiency of 6.5 cd A<sup>-1</sup> and lifetime of 8500 h.

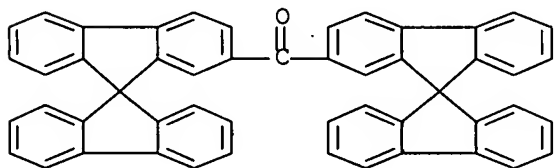
IT 782504-07-8, Bis(9,9'-spirobifluoren-2-yl) ketone

RL: TEM (Technical or engineered material use); USES (Uses)

(preparation of iridium cyclometalated six-membered chelate imine complexes as long-living light-emitting components for electroluminescent devices)

RN 782504-07-8 HCAPLUS

CN Methanone, bis(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



# RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon	1963	21	277	JOURNAL FUER PRAKTIS	
Anon	1984	9	23	TRANSITION METAL CHE	HCAPLUS
Canon Kabushiki Kaisha	2002			EP 1211257 A	HCAPLUS
Canty, A	1988	41	651	AUSTRALIAN JOURNAL O	HCAPLUS
El-Dissouky, A	1984	87	213	INORGANICA CHIMICA A	HCAPLUS
Fuchita, Y	1995	239	125	INORGANICA CHIMICA A	HCAPLUS

L45 ANSWER 4 OF 5 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2006:1226567 HCAPLUS Full-text

DN 146:17890

TI Multicyclic compounds for organic electronic devices and their use and the devices

IN Vestweber, Horst; Heil, Holger; Stoessel, Philipp; Buesing, Arne; Parham, Amir; Fortte, Rocco

PA Merck Patent GmbH, Germany

SO PCT Int. Appl., 79pp.

CODEN: PIXXD2

DT Patent

LA German

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI WO 2006122630	A1	20061123	WO 2006-EP3670	20060421
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH,				

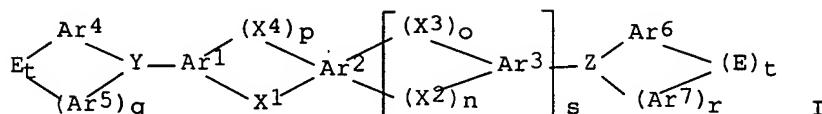
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KG, KZ, MD, RU, TJ, TM

DE 102005023437 A1 20061130 DE 2005-102005023437 20050520

PRAI DE 2005-102005023437 A 20050520

OS MARPAT 146:17890

GI



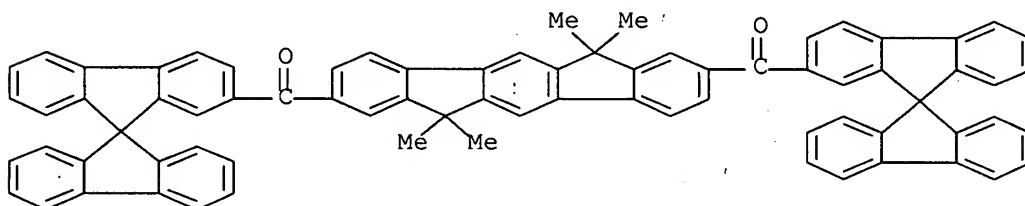
AB The title compds. are described by the general formula I (Y = N, P, P:O, PF<sub>2</sub>, P:S, As, As:O, As:S, Sb, Sb:O, Sb:S, C:O, O, S, Se, Te, S:O, SO<sub>2</sub>, Se:O, SeO<sub>2</sub>, Te:O, or TeO<sub>2</sub>; Ar<sub>1-3</sub> = independently selected at each occurrence optionally substituted (hetero)aryl groups with 5-24 atoms in the aromatic rings; Ar<sub>4-7</sub> = independently selected at each occurrence optionally substituted (hetero)aryl groups with 5-40 atoms in the aromatic rings; E = independently selected at each occurrence single bonds, N(R<sub>1</sub>), O, S, C(R<sub>1</sub>)<sub>2</sub>, or B(R<sub>1</sub>); R<sub>1</sub> = selected substituents, including substituents which may bond together to form (poly)cyclic ring systems; X<sub>1-4</sub> = selected bridging groups or combinations of bridging groups; n, p, and o = 0 or 1, with the restriction that only if X<sub>1</sub> is not a C(R<sub>1</sub>)<sub>2</sub> group for which R<sub>1</sub> = an open chain alkyl residue can n, p, and o may be 0 simultaneously, and, when the bridge is absent it is replaced by two H atoms or other substituents; q, r = 1 when the central atom of the Y or Z groups is an element from the fifth main group of the periodic table or 0 when the central atom is selected from the fourth or sixth main groups; s = 1, 2, or 3; and t = 0 or 1, with an R<sub>1</sub> group being attached in place of E when t = 0 and with t = 0 when q = 0). Polymers, oligomers, and dendrimers are described which have repeating units based on the compds. The use of the compds. in electronic devices (e.g., organic electroluminescent devices, organic FETs, organic integrated circuits, organic thin-film transistors, organic integrated circuits, organic solar cells, organic field quenching devices, organic light-emitting transistors, light-emitting electrochem. cells, organic photoreceptors, and organic laser diodes) is also described. The compds. may serve as hole- or electron-transporting materials, as hole-blocking materials, or as host materials in emitting devices.

IT 915406-45-0

RL: TEM (Technical or engineered material use); USES (Uses)  
(multicyclic materials for organic electronic devices and their use and the devices)

RN 915406-45-0 HCAPLUS

CN Methanone, 1,1'-(6,12-dihydro-6,6,12,12-tetramethylindeno[1,2-b]fluorene-3,8-diyl)bis[1-(9,9'-spirobi[9H-fluoren]-2-yl)- (CA INDEX NAME)



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon	2000	2000		PATENT ABSTRACTS OF	
Mitsui Chemicals Inc	2000			JP 2000026324 A	HCAPLUS
Xiao-Yu	2004	69	6050	THE JOURNAL OF ORGAN	

L45 ANSWER 5 OF 5 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2006:1173494 HCAPLUS Full-text

DN 145:498536

TI Organic electronic devices and boronic acid and boronic acid derivatives used therein

IN Stoessel, Philipp; Breuning, Esther; Buesing, Arne; Parham, Amir; Heil, Holger; Vestweber, Horst

PA Merck Patent G.m.b.H., Germany

SO PCT Int. Appl., 159pp.

CODEN: PIXXD2

DT Patent

LA German

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	WO 2006117052	A1	20061109	WO 2006-EP3150	20060406
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	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				

PRAI EP 2005-9643 A 20050503

AB Organic electronic devices (e.g., organic or polymer light-emitting diodes, organic field-effect transistors, organic integrated circuits, organic thin-film transistors, organic light-emitting transistors, organic solar cells, organic field quenching devices, organic light-emitting cells, organic photoreceptors, and organic laser diodes) are described which comprise  $\geq 1$  organic film including  $\geq 1$  aromatic boronic acid or boronic acid derivative compound. The compds. may serve as fluorescent or phosphorescent dopants, as hole-blocking materials, as hole-transporting materials, or as electron-transporting materials. Oligomeric, dendrimeric, and polymeric compds. of boronic acid or boronic acid derivative compds. are also described. Methods for synthesizing polymers including boronic acid. derivs: are described which entail polycondensation of aliphatic or aromatic bis(diols), bis(dithiols), bis(diamines), or similar higher substituted compds. with an aromatic bisboronic acid or higher boronic acid or by reaction of an aromatic compound that includes 2 hydroxy, thiol, or amino groups as well as a boronic acid group.

IT 914307-04-3P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

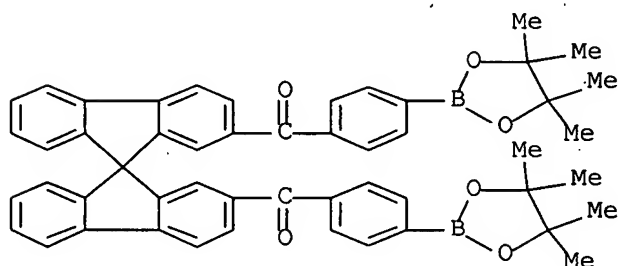
(organic electronic devices and boronic acid and boronic acid derivs. used in them and production of polymers including boronic acid-containing

groups)



RN 914307-04-3 HCAPLUS

CN Methanone, 9,9'-spirobi[9H-fluorene]-2,2'-diylbis[[4-(4,4,5,5-tetramethyl-1,3,2-dioxaborolan-2-yl)phenyl]- (9CI) (CA INDEX NAME)



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Amann, N	2002	8	4877	CHEMISTRY, A EUROPEA	HCAPLUS
Amann, N	2002		687	SYNLETT	HCAPLUS
Anon	2003	2003		PATENT ABSTRACTS OF	
Anon	2003	2003		PATENT ABSTRACTS OF	
Baumgarten, M	2000	104	1130	JOURNAL OF PHYSICAL	HCAPLUS
Beinhoff, M	2001		3819	EUROPEAN JOURNAL OF	HCAPLUS
Buettelmann, B	2003			US 2003229096 A1	HCAPLUS
Chisso Corporation	2001			EP 1142895 A	HCAPLUS
Chow, H	2002	85	3444	HELVETICA CHIMICA AC	HCAPLUS
Chow, H	2001	66	5042	JOURNAL OF ORGANIC C	HCAPLUS
Covion Organic Semicond	2002			WO 02051850 A	HCAPLUS
Covion Organic Semicond	2002			WO 02052661 A	
Eastman Kodak Company	2005			WO 2005020283 A	HCAPLUS
Finocchiaro, P	1973	95	7029	JOURNAL OF THE AMERI	HCAPLUS
Goswami, A	2004		2635	EUROPEAN JOURNAL OF	HCAPLUS
Ishikura, M	1985	23	2375	HETEROCYCLES	HCAPLUS
Ishiyama, T	1997	201	92	SPECIAL PUBLICATION	HCAPLUS
Kaupp, G	2003	9	4156	CHEMISTRY, A EUROPEA	HCAPLUS
Ken-Tsung, W	2002	67	1041	JOURNAL OF ORGANIC C	
Koch, K	1991	124	2091	CHEMISCHE BERICHTE	HCAPLUS
Koei Chem Co Ltd	2004			JP 2004189705 A	HCAPLUS
Konica Corp	2003			JP 2003031368 A	HCAPLUS
Lg Chem Ltd	2003			WO 03095445 A	HCAPLUS
Michels, J	2003	9	6167	CHEMISTRY, A EUROPEA	HCAPLUS
Modrakowski, C	2001		2143	SYNTHESIS	HCAPLUS
Ramsey, B	2005	690	962	JOURNAL OF ORGANOMET	HCAPLUS
Tirapattur, S	2002	106	8959	JOURNAL OF PHYSICAL	
Treacher, K	2004			US 2004260090 A1	HCAPLUS
Tsung, W	2004			US 2004147742 A1	
Universal Display Corpo	2003			WO 03033617 A	
Wei-Bo, W	2002			US 2002019527 A1	
Wong, K	2002	124	11576	JOURNAL OF THE AMERI	HCAPLUS
Yamashita, M	2000	39	4055	ANGEWANDTE CHEMIE IN	HCAPLUS

=&gt; d his

(FILE 'HCAPLUS' ENTERED AT 06:53:39 ON 20 AUG 2007)

DEL HIS

L1 1 S US20060006365/PN OR (US2005-523101# OR WO2003-EP8465 OR IT200  
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 L2 3 S E16  
 E RAMPAZZO/AU  
 L3 56 S E18-E21  
 E LILIANA/AU  
 E FIORAVANTI/AU  
 L4 16 S E25,E30  
 E GIULIA/AU  
 E MATTIELLO/AU  
 L5 38 S E27,E28  
 E MERCK OLED/CO  
 L6 3907 S E4-E12  
 E E4+ALL  
 E E1+ALL  
 L7 12407 S E2+RT  
 E MERCK OLED/PA,CS  
 L8 3907 S E6-E49  
 E MERCK KGAA/PA,CS  
 L9 178 S E3-E63  
 E BACK E3  
 L10 5 S E2,E9,E10  
 L11 5 S E3  
 E COVION/CO  
 L12 100 S E4,E5  
 E E4+ALL  
 E COVION/PA,CS  
 L13 101 S E3-E20  
 L14 1 S L1 AND L2-L13  
 SEL RN

FILE 'REGISTRY' ENTERED AT 06:59:11 ON 20 AUG 2007

L15 31 S E1-E31  
 L16 19 S L15 AND NR>=6  
 L17 18 S L16 NOT C25H16  
 E 9841/RID  
 L18 11661 S E3  
 E 9841.9/RID  
 L19 1507 S E4  
 L20 STR  
 L21 3 S L20 SAM SUB=L18  
 L22 33 S L20 FUL SUB=L18  
 SAV L22 NELSON532A/A  
 L23 21 S L22 NOT L17  
 L24 13 S L23 NOT PMS/CI  
 L25 6 S L17 NOT L22  
 L26 2 S L24 AND (C39H26N2O2 OR C39H22BR2O2)  
 L27 12 S L17 AND L22  
 L28 14 S L26,L27  
 SAV L28 NELSON532B/A

FILE 'HCAOLD' ENTERED AT 07:06:31 ON 20 AUG 2007

L29 0 S L28

FILE 'HCAPLUS' ENTERED AT 07:06:34 ON 20 AUG 2007

L30 6 S L28  
 L31 3 S L30 AND L1-L14  
 L32 2 S L30,L31 AND PY<=2004 NOT P/DT  
 L33 2 S L30,L31 AND (PD<=20041227 OR PRD<=20041227 OR AD<=20041227) A

L34 5 S L31-L33  
L35 6 S L30,L34

FILE 'USPATFULL' ENTERED AT 07:08:02 ON 20 AUG 2007  
L36 2 S L28

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L37 19 S L22 NOT L28

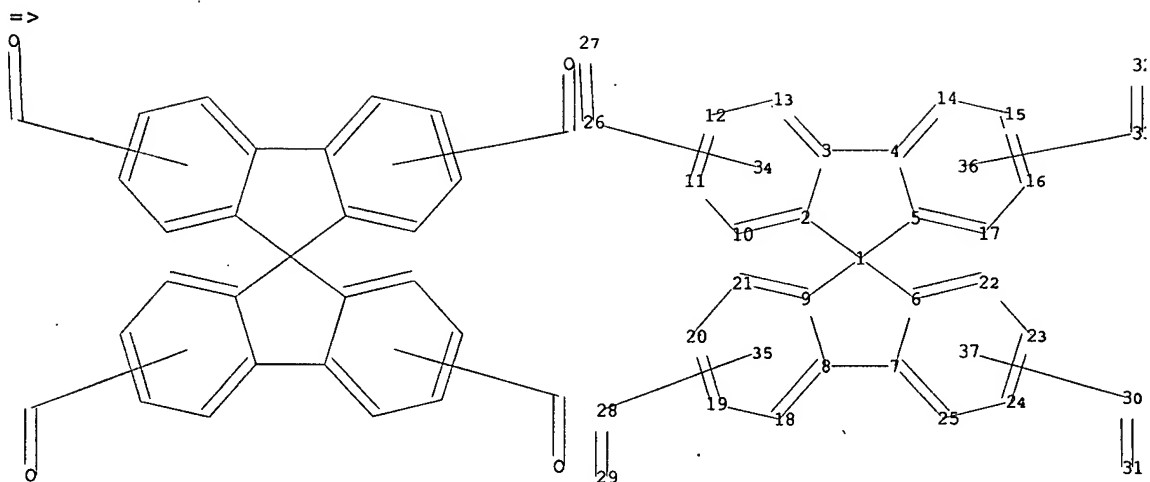
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L38 19 S L37  
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L42 12 S L40,L41  
L43 9 S L39 AND L42  
L44 12 S L42,L43

FILE 'REGISTRY' ENTERED AT 07:09:53 ON 20 AUG 2007

FILE 'USPATFULL' ENTERED AT 07:10:03 ON 20 AUG 2007

FILE 'HCAPLUS' ENTERED AT 07:10:16 ON 20 AUG 2007  
L45 5 S L39 NOT L44

=>



chain nodes :

26 27 28 29 30 31 32 33

ring nodes :

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

chain bonds :

26-27 28-29 30-31 32-33

ring bonds :

1-2 1-5 1-6 1-9 2-3 2-10 3-4 3-13 4-5 4-14 5-17 6-7 6-22 7-8 7-25 8-9 8-18 9-21 10-11 11-12 12-13 14-15 15-16 16-17 18-19 19-20 20-21 22-23 23-24 24-25

exact/norm bonds :

1-2 1-5 1-6 1-9 3-4 7-8 26-27 28-29 30-31 32-33

normalized bonds :

2-3 2-10 3-13 4-5 4-14 5-17 6-7 6-22 7-25 8-9 8-18 9-21 10-11 11-12 12-13 14-15 15-16 16-17 18-19 19-20 20-21 22-23 23-24 24-25

Match level :

1:Atom 2:Atom 3:Atom 4:Atom 5:Atom 6:Atom 7:Atom 8:Atom 9:Atom 10:Atom 11:Atom  
12:Atom 13:Atom 14:Atom 15:Atom 16:Atom 17:Atom 18:Atom 19:Atom 20:Atom 21:Atom  
22:Atom 23:Atom 24:Atom 25:Atom 26:CLASS 27:CLASS 28:CLASS 29:CLASS 30:CLASS  
31:CLASS 32:CLASS 33:CLASS 34:Atom 35:Atom 36:Atom 37:Atom

L1 STRUCTURE UPLOADED

=> d 11

L1 HAS NO ANSWERS  
L1 STR  
/ Structure 1 in file .gra /

Structure attributes must be viewed using STN Express query preparation.

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FULL FILE PROJECTIONS: ONLINE \*\*COMPLETE\*\*  
BATCH \*\*COMPLETE\*\*  
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PROJECTED ANSWERS: 3 TO 163

L2 3 SEA SSS SAM L1

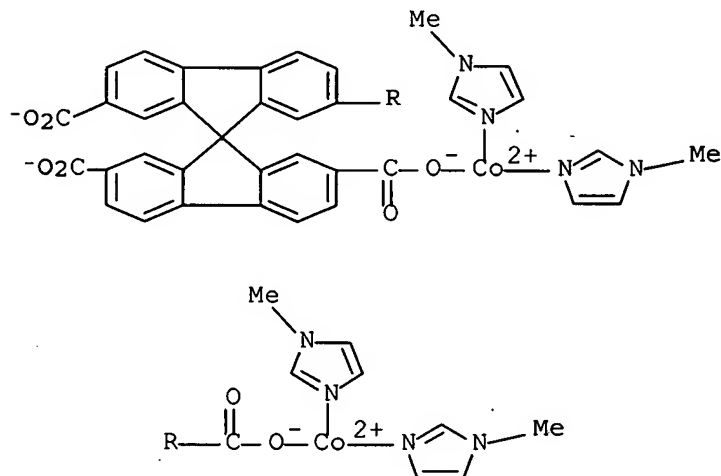
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SEARCH TIME: 00.00.02

L3 19 SEA SSS FUL L1

=> d scan l3

L3 19 ANSWERS REGISTRY COPYRIGHT 2007 ACS on STN  
Hit Structure



Graphics